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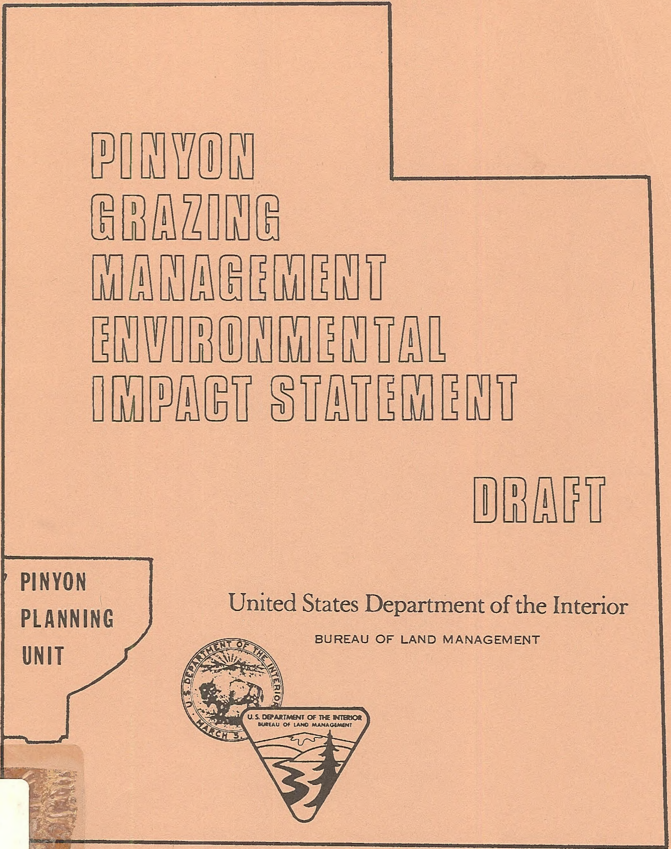

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GRAZING MANAGEMENT
IN THE
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STATE DIRECTOR, UTAH STATE OFFICE

PINYON GRAZING MANAGEMENT ENVIRONMENTAL IMPACT STATEMENT

(X) Draft ( ) Final Environmental Statement

Department of the Interior, Bureau of Land Management

1. Type of Action: (X) Administrative ( ) Legislative

2. Abstract: The Bureau of Land Management (BLM) proposes to implement grazing management on 1,264,250 acres of public land in Iron, Beaver, Washington, and Millard Counties in Utah. There are five alternative grazing management strategies analyzed, of which Alternative 2 - Planning Recommendations is the BLM preferred alternative. This alternative involves the implementation of intensive grazing management on 32 allotments, maintaining existing intensive management practices on 23 allotments and retaining existing custodial level management on 18 allotments. The forage resource would be managed to support existing wildlife numbers in the short term and to provide sufficient forage and quality habitat to support long-term and prior stable wildlife numbers. Wild horse numbers would be reduced from the current estimated 552 to 215, the number estimated to be present in the planning unit at the time of the passage of the Wild and Free-Roamining Horse and Burro Act of 1971. Extensive vegetation treaments and the installation of rangeland facilities such as fences, water developments, pipelines, etc. would be necessary in order to implement this alternative. Over the long term, management actions under this alternative would be expected to yield an increase in available livestock and wildlife forage from 60,757 and 2,663 animal unit months (AUMs) respectively to 88,103 and 5,407 AUMs respectively. Forage available for wild horses would be reduced from 8,345 AUMs to 3,225 AUMs and stabilized at that level.

The anticipated environmental consequences vary between alternatives, but the primary effects would be to vegetation (the availability of forage), wildlife habitat condition, wild horse numbers, and rancher income. Specific impacts would vary with degree of management proposed and the subsequent change from the existing situation.

3. Alternatives Analyzed:

   a. Continuation of Present Management (No Action)
   b. Planning Recommendations (BLM Preferred Alternative)
   c. Livestock Grazing Preference
   d. Resident Resource Values
   e. Livestock Maximization

4. Comments Have Been Requested From the Following: See List of Agencies, Organizations, and Persons to Whom Copies of the Statement are Sent.

5. Date by Which Comments Must Be Received: August 16, 1982

6. For Further Information Contact:

Morgan Jensen, District Manager
Bureau of Land Management
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Cedar City, Utah 84720
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7. Date Draft Statement Made Available to EPA and the Public: JUN 23 1982

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SUMMARY

This Environmental Impact Statement (EIS) analyzes the probable effects of implementing each of five alternative rangeland management programs for the Pinyon Planning Unit. Based upon these analyses, inventory data, planning documents, and public input, BLM will select a rangeland management program for the 1.25 million acres of Federal lands in the planning unit.

The actions will affect some 73 allotments within the Pinyon Planning Unit of the Beaver River Resource Area (BRRA). Primarily, the western halves of Iron and Beaver Counties would be affected (see Figure 1-1), although minor acreages in Washington and Millard Counties would also be affected. Within the planning unit there is a total 1,576,318 acres of which 1,264,250 are Federal, 163,961 State, and 148,107 private.

The purpose of the action - implementation of a grazing management plan in the Pinyon Planning Unit (PU) - would be to maintain stability in the livestock industry; to bring the grazing uses of the vegetation resource into balance with its capacity to sustain such uses over the long run; and to provide for orderly use, improvement, development, and rehabilitation of the public lands. In such action, the implementation of the management plan will help BLM meet its managerial responsiblities under a variety of laws (Taylor Grazing Act, 1934; Public Rangeland Improvement Act, 1978; and the Federal Land Policy Management Act, 1976), rules, and regulations.

The need for the action is based on the results of the Soils-Vegetation Inventory Method (SVIM) inventory (conducted from 1979 to 81 by the Cedar City District and BRRA staff) which indicates the need to rehabilitate the rangelands through developments and improvements. Livestock use could be adjusted from an approximate 61,000 AUMs average licensed use or current stocking to an approximate surveyed capacity of 76,000 AUMs. This would amount to an approximate 25 percent overall increase from current stocking, but would remain about 14 percent below the active preference level of approximately 86,000 AUMs.

The overriding issue to be addressed by the EIS is forage management. Within this topic, there are two major subissues: management intensity and forage allocation. Table 1 below summarizes the components of these issues:

Table 1

Issue Component	Involvement in Issue Determination
Allotment Categorization	While allotment categorization is in itself only an administrative action, the issues that would be involved by its full implementation are in the form of possible options and opportunities that would be foregone by perittees whose allotments fall in the M and C categories. The major opportunities foregone in M and C allotments would have to be initiated and

Table 1 concluded

Issue Component	Involvement in Issue Determination
	financed by the permittee rather than by BLM. Managerial options would also be restricted in these allotments in that any substantial change from existing operations (i.e., season of use, level of use, kind of livestock, etc) could require a re-categorization of the allotment involved (see Appendix 7). Quantification of impacts resulting from the implementation of this administrative action is not possible because it depends on what permittees "might have done"; however, an approximization is given in the difference between Alternative 2 (with I, M, and C categories) and Alternative 3 (without).
Forage allocations to livestock	SVIM data indicate the need for significant reductions in many allotments. Issues have been determined by interdisciplinary teams as well as through individual permittee involvement.
Forage allocations to wildlife	SVIM and wildlife inventory data indicate conflicts on some allotments between wildlife and livestock and wildlife and wild horses. Issues have been primarily determined by interdisciplinary teams.
Forage allocations to wild horses	SVIM and wildlife inventory data indicate conflicts between wild horses and livestock and wild horses and wildlife. Issues have been primarily determined by interdisciplinary teams.
Wild horse herd consolidations, numbers, reductions, and relocations	Issues have been determined by interdisciplinary teams, individual members of the public, and special interest groups.

Alternatives

There are five alternatives which are analyzed in the EIS: Continuation of Present Management, Planning Recommendations, Livestock Grazing Preference, Resident Resource Values, and Livestock Maximization. The management actions proposed under each of the alternatives are varied depending upon the objectives of the alternative and the resource mix each is designed to favor. Descriptions of the alternatives are given below:

Continuation of Present Management (No Action) - Alternative 1

The objective of this alternative would be to project the effects of continuing existing management practices and intensities into the future. No new management actions would be undertaken, but existing grazing plans would be continued. Existing levels of livestock, wildlife, and wild horse use would be maintained at 60,757, 2,663, and 8,345 AUMs respectively.

Planning Recommendations - Alternative 2

The overall objective of this alternative would be to provide a balanced multiple use resource management program. The major management actions that would be implemented are the design and implementation of livestock grazing systems in selected allotments, vegetation treatments (over 98,000 acres would be treated), and the installation of rangeland facilities (water developments, fences, etc.). Over the long term it is anticipated that the actions carried out under this alternative would increase stocking for livestock and wildlife from current stocking levels of 60,757 and 2,663 to 88,103 and 5,407 AUMs respectively, while wild horse AUMs would be reduced from 8,345 to 3,225 and stabilized at that level.

Livestock Grazing Preference - Alternative 3

The overall objective of this alternative would be to restore to active status all AUMs which have been placed in suspended non-use - that is, to restore total livestock grazing preference. The major management actions which would be undertaken in this alternative are vegetation treatments (nearly 105,000 acres would be treated), installation of rangeland facilities, implementation of intensive grazing systems, and the removal of over 400 wild horses. By such actions it is anticipated that over the long term, forage for livestock would increase from 75,990 to 124,589 AUMs. Wildlife forage would be maintained at the current level of 2,663 AUMs while forage for wild horses would be reduced from 8,345 to 1,950 AUMs and maintained at that level.

Resident Resource Values - Alternative 4

The overall objective of this alternative would be to formulate a management format which favors the resident resources - that is, the nonlivestock values. However, since there are conflicts between the two major resident resources, wildlife and wild horses, a separate subalternative for each has been developed.

Wildlife Subalternative. The objectives of this subalternative would be to provide sufficient forage over an extended period to support long-term and prior stable numbers of wildlife and to provide for qualitative habitat improvements not necessarily associated with forage production. The major management actions that would be implemented under this alternative closely parallel those proposed under the Planning Recommendations Alternative: the implementation of intensive livestock grazing management systems, vegetation treatments - both livestock and wildlife (over 107,000 acres), installation of rangeland facilities especially those protecting special habitat features and wet areas, and the removal of wild horses from elk range and deer summer range. The anticipated long-term effects of these actions would be increases of forage for livestock and wildlife from 75,990 and 2,663 AUMs respectively to 103,463 and 5,425 AUMs respectively. Wild horses would be reduced from 8,345 to 2,010 AUMs and maintained at that level.

Wild Horse Subalternative. The objectives of this subalternative would be to stabilize horse herd populations and to encourage genetic improvement or reintroduction of the remnant "Spanish Barb" bloodline if possible. The major managerial actions which would be undertaken are adjustments of livestock grazing to capacity, the implementation of intensive livestock grazing, and the development of a number of springs and other water sources. The combined long-term effect of these actions would be the increase of forage for livestock from 75,990 AUMs to 78,237 AUMs. Wildlife forage would be maintained at the current level of 2,663 and forage for wild horses would be increased from 8,345 to 12,825 AUMs.

Livestock Maximization - Alternative 5

The objective of this alternative would be to establish an upper limit for the capacity of the Pinyon Planning Unit to produce livestock forage. The major management actions that would be undertaken to accomplish this are the treatment of nearly 841,000 acres, the implementation of intensive grazing systems on all allotments, the installation of numerous rangeland facilities, and the elimination of wild horses from the planning unit. It is anticipated that over the long term, these actions would yield an increase in livestock forage from 75,990 to 209,006 AUMs. Forage for wildlife would be maintained at 2,663 AUMs while wild horse AUMs would be reduced from 8,345 to 0.

Summary

The type of impact (positive, no impact, or negative) imposed on each affected resource varies by alternative. These overall qualitative impacts are summarized in Table 2, Qualitative Summary. Detailed long-term impacts are presented in Table 3, Summary of Long-Term Environmental Consequences.

Table 2

QUALITATIVE SUMMARY

Resources	Alternative 1 Continuation of Present Management (No Action)	Alternative 2 Planning Recommendations	Alternative 3 Livestock Grazing Preference	Alternative 4 Resident Resource Values		Alternative 5 Livestock Maximization
				Wildlife	Wild Horses	
Vegetation	0[a]	+[b]	+	+	+	+
Livestock	0	+	+	+	+	+
Wildlife						
Deer	-[c]	+	+	+	-	-
Elk	-	+	+	+	-	-
Antelope	-	+	+	+	-	-
Sage Grouse	0	0	0	0	0	-
T&E Species	0	0	0	0	0	0
Wild Horses	0	-	-	-	+	-
Socioeconomics						
Ranchers	0	+	+	+	0	+
Region	0	0	0	0	0	+

0[a] = No change
+[b] = Positive impact
-[c] = Negative impact

Table 3

Summary of Long-Term Environmental Consequences

Resource Element and Present Situation		Alternative 1 Continuation of Present Management	Alternative 2 Planning	Alternative 3 Grazing Preference	Alternative 4		Alternative 5 Livestock Forage Maximization
					Resident Resource Values - Wildlife	Resident Resource Values - Wild Horses	
VEGETATION							
Ecological Condition							
	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
Climax	28,805	28,805	28,405	28,280	26,561	28,405	5,252
High	269,507	379,235	359,941	350,075	351,179	363,739	109,265
Medium	663,394	655,779	706,032	716,551	712,089	665,980	1,053,587
Low	187,715	185,602	155,038	154,515	159,592	191,297	81,317
Unclassified	14,829	14,829	14,829	14,829	14,829	14,829	14,829
Total	1,264,250						
Trend in Ecological Condition	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
Up	129,246	146,127	156,356	162,677	155,589	110,087	57,807
Down	194,212	206,999	165,002	166,058	159,767	204,912	124,828
Static	925,381	895,713	927,481	920,104	933,483	933,840	1,066,204
Unclassified	15,411	15,411	15,411	15,411	15,411	15,411	15,411
Total	1,264,250						
Available Livestock Forage Production (Long Term)	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)
	75,990	88,583	113,105	124,589	103,463	78,237	209,006
Livestock Forage Allocation	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)	
	60,757	60,757	88,103	124,589	102,024	78,237	209,006

(continued)

Table 3 continued

Resource Element and Present Situation	Alternative 1 Continuation of Present Management	Alternative 2 Planning	Alternative 3 Grazing Preference	Alternative 4		Alternative 5 Livestock Forage Maximization
				Resident Resource Values - Wildlife	Resident Resource Values - Wild Horses	
WILDLIFE HABITAT Mule Deer	Habitat quality would decline on 6,262 acres summer range, 20,495 acres winter range, and 16,859 acres yearlong range.	Habitat quality would improve on 8,008 acres summer, 59,000 acres winter, 21,969 acres yearlong.	Habitat quality would improve on 5,708 acres summer, 67,914 acres winter, 30,566 acres yearlong.	Habitat quality would improve on 9,927 acres summer, 75,457 acres winter, 36,140 acres yearlong.	Habitat quality would decline on 6,480 acres summer, 4,271 acres winter, 11,722 acres yearlong.	Habitat quality would decline on 16,010 acres summer, 172,168 winter, 55,148 yearlong.
Antelope	Habitat quality would decline on 41,000 acres of yearlong range.	Habitat quality would improve on 34,399 acres of yearlong range.	Habitat quality would improve on 26,205 acres of yearlong range.	Habitat quality would improve on 40,120 acres of yearlong range.	Habitat quality would decline on 14,187 acres of yearlong range.	Habitat quality would decline on 113,595 acres of yearlong range.
Elk	Habitat quality would decline on 1,362 acres of summer, 656 acres winter, and 8,902 acres yearlong.	Habitat quality would improve on 3,816 acres summer, 7,812 acres winter, 8,039 acres yearlong.	Habitat quality would improve on 3,816 acres summer, 7,812 acres winter, 8,039 acres yearlong.	Habitat quality would improve on 4,658 acres summer, 7,812 acres winter, 10,839 acres yearlong.	Habitat quality would decline on 1,649 acres summer, 656 acres winter, 8,548 acres yearlong.	Habitat quality would decline on 3,521 acres summer, 9,379 acres winter, 0 acres yearlong.
Sage Grouse	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	Loss of approximately 90 percent of sage grouse habitat and 7 strutting grounds.
Threatened and Endangered Species	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	No adverse impacts. May improve prairie dog habitat.

(continued)

Table 3 concluded

Resource Element and Present Situation			Alternative 1 Continuation of Present Management		Alternative 2 Planning		Alternative 3 Grazing Preference		Alternative 4 Resident Resource Values - Wildlife		Alternative 4 Resident Resource Values - Wild Horses		Alternative 5 Livestock Forage Maximization	
WILD HORSES														
Number of Animals Managed in Long Term			552		215		130		146		855		0	
SOCIOECONOMICS														
Long-Term Change in Rancher Net Cash Income														
Class of Livestock	Operation Size	Season of Use	Net Cash	Percent Change	Net Cash	Percent Change	Net Cash	Percent Change	Net Cash	Percent Change	Net Cash	Percent Change	Net Cash	Percent Change
cattle	small (0-99)	summer	$ 2,263	--	$ 2,896	+28	$ 3,750	+66	$ 5,040	+123	$ 2,135	-6	$ 16,000	+607
cattle	small	FAWISP	6,334	--	6,334	--	9,470	+50	10,620	+68	9,020	+42	15,900	+151
cattle	large (100+)	summer	26,487	--	38,146	+44	30,700	+16	36,175	+37	25,161	-5	66,800	+152
cattle	large	FAWISP	38,522	--	41,628	+8	48,700	+26	48,100	+25	41,150	+7	76,800	+99
cattle	large	year-long	23,716	--	42,286	+78	59,750	+152	49,900	+110	35,500	+50	118,800	+401
sheep	small (0-499)	......	13,124	--	28,797	+119	29,160	+122	28,950	+121	15,130	+15	38,200	+191
sheep	large (500+)	......	88,803	--	123,693	+39	127,000	+43	125,600	+41	111,000	+25	181,000	+104
Long-Term Impacts to the Regional Economy														
Direct Farm Labor Employment			22 jobs[a]		31 jobs[a]		34 jobs[a]		33 jobs[a]		27 jobs[a]		55 jobs[a]	
Direct Agricultural Purchases			$994,306 per yr.		$1,594,168		$1,729,490		$1,649,730		$1,317,899		$3,138,123	

[a] 40 hours per week, 50 weeks per year.

CHAPTER 1

PURPOSE AND NEED FOR ACTION

Introduction

The Pinyon Planning Unit (PU) is located in southwestern Utah (see Figure 1-1) and includes primarily the western halves of Iron and Beaver Counties with minor acreages in both Millard and Washington Counties. There is a total of 1,576,318 acres in the PU; 1,264,250 acres (80 percent) are Federal, 163,961 (11 percent) are State, and 148,107 (9 percent) are private.

This environmental impact statement (EIS) addresses the potential impacts of five alternative ways of managing the forage and the other interrelated resources within the PU.

Purpose and Need

Purpose

The purpose of the action - implementation of a grazing management plan - in the Pinyon PU would be to maintain stability in the livestock industry; to bring the grazing uses of the vegetation resource into balance with its capacity to sustain such uses over the long run; and to provide for orderly use, improvement, development, and rehabilitation of the public lands. The implementation of the management plan will help BLM meet its managerial responsibilities under a variety of laws (Taylor Grazing Act, 1934; Public Rangeland Improvement Act, 1978; and the Federal Land Policy Management Act, 1976), rules, and regulations.

Need

The need for the action is indicated by the results of the Soils-Vegetation Inventory Method (SVIM) inventory (conducted from 1979 to 81 by Cedar City District and Beaver River Resource Area staff members) which indicate the need to rehabilitate the rangelands through developments and improvements. Livestock use could be adjusted from an approximate current stocking of 61,000 AUMs to an approximate surveyed capacity of 76,000 AUMs. For additional information on SVIM, refer to Appendix 1. This would amount to an approximate 25-percent overall increase from average actual use, but about a 14-percent reduction from the active preference level of approximately 86,000 AUMs.

The Planning Process

The EIS is only one step in the Bureau of Land Management planning process (see Appendix 2). It provides the public and the BLM decision maker with an estimation of the impacts which would be likely to occur if a particular course of management were taken. The planning process begins with the collection, organization, and analysis of basic resource data for the PU. This information is summarized and presented in the Unit Resource Analysis (URA) which contains detailed descriptions of both existing resource conditions and

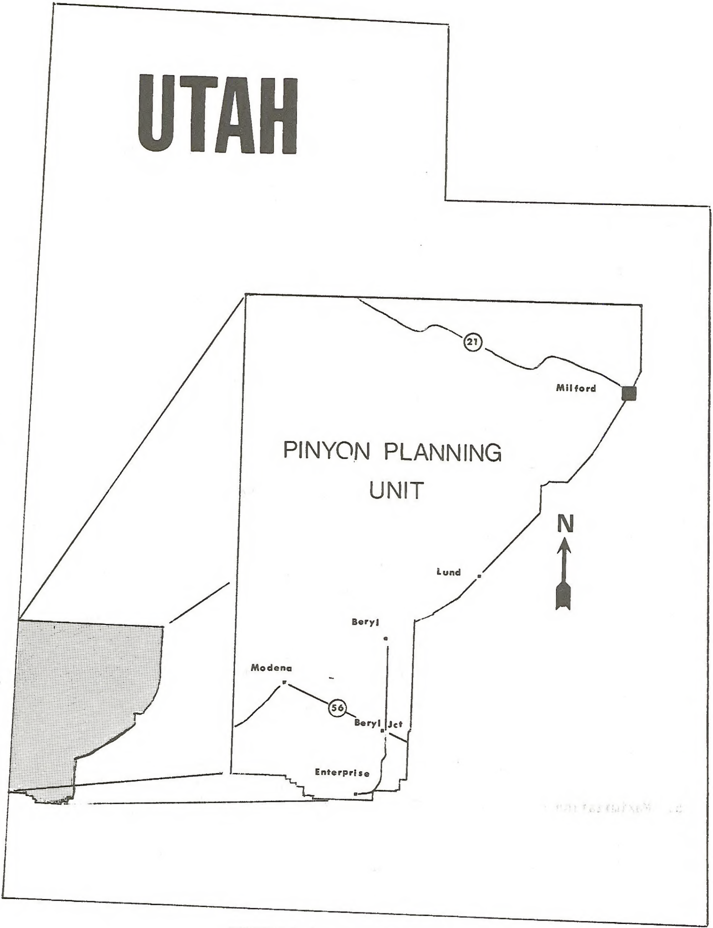

FIGURE 1-1 GENERAL LOCATION

management opportunities. On the basis of this URA information, BLM resource specialists, working as an interdisciplinary team, formulated a set of recommendations - the first step of the Management Framework Plan (MFP Step 1) - for managing the full complement of resources in the planning unit. This set of recommendations along with their respective multiple use interactions and conflicts were presented to the Area Manager. During this step (MFP Step 2) of the process, it is the Area Manager's responsibility to consider the various resource interactions and conflicts along with such concerns as social, economic, BLM policy, etc. and recommend a land use plan which balances the needs and productive capacities of the area. These MFP Step 2 recommendations, along with applicable alternatives are the analysis base of this EIS.

Scoping of Issues

Within the planning process, provision is made for public involvement at several points. During the preplanning stages, planning workshops were held in Cedar City (September 1978) in which a broad range of public concerns were developed (see Appendix 3). Participants subsequently helped consolidate these concerns into a list of issues for the PU which guided the planning that has been done (see Appendix 4). These issues are: (1) forage management including forage allocation, allotment categorization, land treatments for livestock, and land treatments for wildlife; (2) oil and gas categories including stipulations for surface occupancy; (3) fire management including areas of limited suppression; and (4) rights-of-way and utility corridors. This EIS addresses these concerns embodied in the major issue of forage management. Between MFP Steps 1 and 2, three open houses or scoping meetings were held in various communities around the Pinyon PU - October 27, 1981 at Milford, October 28 at Beryl, and October 29 at Cedar City. Comments received in these meetings have been utilized in the formulation of the various alternatives under consideration in this EIS. Additional time for public involvement is available during the 60-day public comment period on the draft EIS and another 30-day comment period subsequent to the issuance of the final EIS.

Alternatives

The five alternatives under consideration in this EIS are:

1. Continuation of Present Management (No Action)

2. Planning Recommendations

3. Livestock Grazing Preference

4. Resident Resource Values

5. Maximization of Livestock

Alternative 2, Planning Recommendations, is the BLM preferred alternative.

Alternatives Considered but Not Carried Forward

There is one alternative (the elimination of livestock) which was considered for inclusion in the EIS, but has been dropped from further consideration as meeting no identified need. This alternative is not being considered because preliminary analysis indicates there are not extensive resource conflicts (e.g. extreme competition for forage, extensive riparian area conflicts, etc.) which require such an action to resolve. Further, on isolated areas where such action might apply, the Resident Resource Values Alternative adequately addresses the problems.

Interrelationships

BLM-administered lands in the Pinyon PU occupy a vast area, but this area is also interspersed with and bordered by other ownerships and interests. Therefore, management actions taken on BLM lands may also have a strong influence on these interrelated lands and vice versa. BLM management also affects the programs of a variety of agencies, both State and Federal, that do not own land in the planning unit but are responsible for assisting or advising in a variety of land management activities on private, State, or Federal lands within the Unit.

The primary interrelationships of BLM rangeland management activities and other individuals and agencies are as follows:

Agency/Group Responsibility	Nature of Interrelationship
FEDERAL AGENCIES	
Forest Service (FS)	
Administers lands in the Dixie National Forest. FS lands border the planning unit on the south and the Desert Range Experiment Station borders it on the north.	BLM and FS meet twice annually to coordinate management activities, FS administers grazing activities on the Dixie NF to the east and on the south border of the PU, and nine BLM permittees also graze on the Forest, frequently as an integral part of a yearlong program.
Soil Conservation Service (SCS)	
Provides cooperative programs and technical assistance to livestock operators in private and State lands.	SCS has assisted BLM permittees in the planning unit in developing ranch plans which direct specific management of the overall ranching operation including the use of BLM permits.
BLM (Richfield District)	
All or parts of eight allotments covered under the Pinyon planning process are involved with the Richfield District.	Eight allotments are within the Richfield District, but through an Interdistrict Agreement (May 1977) are administered through the Cedar City District's Beaver River Resource Area Office.

Agency/Group Responsibility	Nature of Interrelationship
BLM (Ely and Las Vegas Districts)	
Wild horse herds.	Mt. Elinor and Chokecherry wild horse herds overlap into these two districts.
Grazing Advisory Board (GAB)	
Provides input to the district on rangeland management and rangeland betterment funds. The Board administers 12.5 percent of the fees (collected by BLM for grazing on public lands) that is returned to the State.	The GAB is a direct contact between BLM and the ranching public. The GAB also decides on the apportionment of its part of the grazing fees among a variety of rangeland improvement projects.
Multiple Use Advisory Council (MUAC)	
A council of local citizens appointed by the Secretary of Interior to advise the District Manager concerning use, classification, retention, disposal, or other aspects of public lands planning and management in the public interest.	At three separate meetings this council received briefings on the progress of the Pinyon EIS. Many aspects of the land use planning were discussed. In each instance the council was supportive of BLM's proposed actions. Only one formal recommendation was passed. It reads as follows: "BLM should reduce wild horse herds to 1971 levels and try to determine if they still adversely affect wildlife and range." The council supports removal of some horse herds to locate horses in areas where required forage is available and where they can be managed and maintained easily.
U.S. Fish and Wildlife Service (FWS)	
The FWS is responsible for the protection of threatened and endangered species of plants and animals.	FWS supplies BLM with biological opinions on the impacts of proposed grazing management activities on any known threatened and endangered species in the planning unit.
STATE OF UTAH	
Utah Department of Wildlife Resources (UDWR)	
The UDWR is responsible for the protection, management and conservation of the State's wildlife.	UDWR provides estimates of current and long-term prior stable wildlife numbers from which BLM makes allocations of of forage from Federal lands. BLM and UDWR cooperate in ongoing wildlife

Agency/Group Responsibility	Nature of Interrelationship
	habitat management programs. UDWR also administers the 10,000-acre Indian Peak Wildlife Management Area which lies within the Pinyon PU.
Utah Department of Lands (UDL) UDL is responsible for administering State lands to provide a sustained income to the State treasury.	BLM and UDL coordinate the leasing and management of State lands in the planning unit where stockmen hold permits with both agencies through exchange of use agreements.
Utah State Historic Preservation Officer (SHPO) The SHPO is responsible for the protection and preservation of cultural and historical values in the State.	BLM and the SHPO cooperate in protecting cultural/historical values in the planning unit through a memorandum of understanding which specifies how BLM will attempt to minimize the impacts its grazing management activities will have on cultural resources through either avoidance or a variety of mitigations.

CHAPTER 2

ALTERNATIVES

INTRODUCTION

This chapter presents an overview of the major actions and impacts of the five alternative rangeland management programs being considered for the Pinyon Planning Unit. The focus of analysis in each of the alternatives is on balancing the allocation of a limited forage resource between competing demands by livestock, wildlife, and wild horses.

All analyses presented are summarizations of site specific and allotment specific analyses. This detailed information is available for public inspection at the Beaver River Resource Area Office. Copies of these materials could be made available upon payment of the necessary reproduction fee.

ALTERNATIVES

Continuation of Present Management (No Action) - Alternative 1

This alternative is required by Council on Environmental Quality (CEQ) regulations and establishes and projects a baseline into the future. This alternative assumes that management practices currently in effect will be carried on into the future. No new allotment categorizations, forage allocations, treatments, facilities, systems, or monitoring programs would be proposed. Existing numbers of livestock, wildlife, and wild horses would be maintained. The major projected impacts of implementing this alternative are summarized in the following tables and discussions.

Management Actions

Management actions which could be carried out under this alternative are as follows:

Adjustments to Capacity. Under this alternative there would be no adjustments from current stocking levels to survey capacities. This would result in a 6,826 AUM overallocation of the forage resource on 30 allotments unitwide. Stocking on the remaining allotments would be either at or below the surveyed capacities.

Treatments. No new treatments would be proposed under this alternative.

Facilities. No new facilities would be proposed under this alternative. Existing facilities would be maintained.

Systems. No new grazing systems would be implemented under this alternative, existing systems would be retained.

Estimated Stocking Levels. Stocking levels are estimated on the basis of multiple use demands on the forage resource. Current stocking levels for livestock are estimated from the average licensed use over the past 5 to 10 years. For both wildlife and wild horses, the levels are derived from the number of animals estimated or projected to be present in the planning unit. Stocking levels for both wildlife and wild horses under this alternative would be maintained at current numbers as shown in Table 2-1.

Table 2-1

Estimated Grazing Stocking Levels (AUMs)

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term Production	Short-Term Allocation	Long-Term Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	[b]75,990	75,990	[c]60,757	88,583	60,757
Wildlife[d]	......	....	2,663	2,663	2,663	......	2,663	......
Wild Horses[d]	......	....	8,345	8,345	8,345	......	8,345	......

[a] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.

[b] This number is constrained by wildlife and wild horse forage needs.

[c] It is assumed that livestock forage would continue to be allocated at the current average licensed use level. Permittees could activate grazing use up to the active preference level.

[d] Capacities not subjected to suitability criteria.

Planning Recommendations - Alternative 2

This alternative derives directly from the planning recommendations (see Chapter 1, Planning Process) which address rangeland, wildlife, and wild horse management. One major managerial component of this alternative is the on-the-ground effect of the designation of three allotment management categories - I or intensive management allotments, M or satisfactorily managed allotments, and C or custodial allotments (see Appendix 7). I category allotments are those where more intensive management is needed in order to alleviate existing resource conflicts or problems. Management actions on individual allotments could involve stocking level adjustments, changes in season of use, implementation of or changes in systems, developments, etc. M category allotments are those where existing management is predominantly satisfactory and there are no major resource conflicts requiring changes in the current management framework. C category allotments are those predominantly under a custodial type of management. Many are small isolated tracts, surrounded by or interspersed with private or other ownerships or are mainly in poor condition and are not deteriorating further but where intensive management has not been practicable because of the largely unproductive nature of the existing vegetation. Custodial management would be continued on the C allotments. The other major component would be the implementation of monitoring programs. Under this alternative BLM proposes to retain current stocking levels and management on 23 M allotments and 18 C allotments where it has been determined that there are no significant resource conflicts. On 32 I allotments where resource conflicts have been identified, BLM proposes vegetation treatments and changes in stocking levels, management, and seasons of use in order to bring grazing use of the forage resource into line with surveyed capacity.

The monitoring programs proposed under this alternative are specifically designed for each of the three management categories. The systems involve the monitoring of actual use, climate (rainfall, temperatures, etc.), utilization of key forage species, and vegetation trend. For I allotments, utilization and trend studies will be performed every year. On M and C allotments, these studies would be scheduled for every 3 to 5 years. If monitoring indicates that grazing practices are resulting in overutilization or declining trends, on any allotment, potential corrective actions such as reductions in grazing animals, redesign of systems, changes in season of use, etc. would be applied as needed to remedy the problems. For specific detail on the monitoring program, refer to Appendix 5.

Estimated Stocking Levels

Stocking levels are estimated on the basis of multiple use demands on the forage resource. Current stocking levels for livestock are estimated from the average licensed use over the past 5 to 10 years. For both wildlife and wild horses, the levels are derived from the number of animals estimated or projected to be present in the planning unit. Stocking levels for wildlife are estimated by UDWR at the following populations: mule deer - 1,287; antelope - 600, and elk - 54. Over the long term, UDWR estimated these populations could increase to 2,482, 1,070, and 178 respectively.

Other Management Actions

Other managment actions proposed under this alternative would be to reduce the estimated number of wild horses from the existing 552 animals to 215, the number estimated to have been present in the planning unit at the time of the passage of the Wild Horse and Burro Act in 1971. Also, of the current nine recognized wild horse herds, four would be consolidated and the overall number reduced to five.

I Category Allotments

Major proposed management actions under this alternative for the I category allotments include the following:

Adjustments to Capacity. In the I category allotments there are 21 allotments where past average licenced use (approximate actual use or current stocking) exceeds the surveyed capacity. Over the short term, livestock stocking levels on these allotments would be reduced an overall average 30 percent from past average licensed use. Over the long term, livestock use would be increased an overall 92 percent over actual use and 28 percent above active preference.

Developments. The developments - both treatments and facilities - which would be needed to meet management objectives of attaining total grazing preference for livestock in the I allotments are as shown in Table 2-2.

Table 2-2

Treatments and Projected Animal Unit Months

	Chain-Burn-Broad-cast-Chain	Burn-Drill	Chain-Burn-Broad-cast	Chain-Broad-cast-Chain	Chain-Broad-cast	Plow-Drill	Pre-scribed Burn	Chain-Burn-Drill	Burn-Broad-cast	Spray	Totals
Acres	58,106	11,200	4,045	3,500	5,475	1,200	2,500	8,700	4,890	-	99,616
AUMs	8,701	2,240	809	700	1,095	240	500	1,740	878	-	16,903

Facilities

Miles of pipeline----131
Spring developments-- 20
Troughs-------------- 65
Miles of fence-------152
Cattleguards--------- 4
Tanks---------------- -
Reservoirs----------- 5
Wells---------------- 3
Windmills------------ -

Systems. In order to maintain vegetation improvements, grazing systems would have to be implemented on a number of allotments. The most probable types of systems, number of allotments, and acreages involved are as follows in Table 2-3 and estimated grazing levels as shown in Table 2-4.

Table 2-3

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	55,887 (2)	293,362 (13)	349,249 (15)
Deferred	40,895 (3)	204,408 (8)	245,313 (11)
Continuous Seasonal	539,767 (26)	0 (0)	41,987 (5)
Unallotted	40,446 (1)	0 (0)	40,446 (1)

M Category Allotments

Proposed management on the M category allotments would be to continue the existing grazing management. There are no proposals under this alternative for any development or facilities beyond what currently exists. No new livestock vegetation treatments beyond those which currently exist are proposed and no new BLM facilities would be constructed (some wildlife treatments would occur). However, 26 allotments (576,933 acres) would continue to be managed under rest rotation and deferred rotation grazing systems. Stocking rates in M category allotments are estimated as shown in Table 2-5.

Systems. Existing systems in M allotments which would be retained are as shown in Table 2-6.

Table 2-4

Estimated Grazing Stocking Levels - Animal Unit Months (AUMs)

Management Categories	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term[a] Production	Short-Term Allocation	Long-Term[a] Production	Long-Term Allocation
Livestock	44,600	55,232	29,757	31,626	32,820	32,820	57,103	57,103
Wildlife[b]	......	......	1,381	[c]1,381	1,381	1,381	[d]2,913	2,913
Wild Horses[b]	......	......	5,866	[c]5,866	[d]2,460	2,460	[d]2,460	2,460

---

[a] This number is constrained by wildlife and wild horse forage needs.
[b] Capacities not subject to suitability criteria.
[c] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.
[d] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of projected numbers.

Table 2-5

Estimated Grazing Stocking Levels - Animal Unit Months (AUMs)

M Management Categories	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term[a] Production	Short-Term Allocation	Long-Term[a] Production	Long-Term Allocation
Livestock	37,592	46,225	28,581	42,134	42,652	[b]28,581	53,701	[b]28,581
Wildlife[c]	......	......	1,107	[d]1,107	[d]1,107	1,107	[e]2,347	2,347
Wild Horses[c]	......	......	2,209	[d]2,209	[e]690	690	[e]690	690

[a] This number is constrained by wildlife and wild horse forage needs.

[b] It is assumed that livestock forage would continue to be allocated at the current average licensed use level. Permittees could activate grazing use up to the active preference level.

[c] Capacities not subjected to suitability criteria.

[d] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.

[e] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of projected numbers.

Table 2-6

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	186,306 (3)	--	186,306 (3)
Deferred Rotation	287,362 (16)	--	287,362 (16)
Continuous Seasonal	47,380 (3)	--	47,380 (3)
Unallocated	7,984 (1)	--	7,984 (1)

C Category Allotments

Proposed management on C category allotments would continue the existing custodial grazing management. There are no proposals under this alternative for any additional developments, treatments, or facilities in C category allotments. Stocking rates on these allotments are estimated in Table 2-7.

Table 2-7

Estimated Grazing Stocking Levels - Animal Unit Months

C Management Categories	Active Prefer-ence	Total Prefer-ence	Average Actual Use	Surveyed[a] Produc-tion	Short-Term Produc-tion	Short-Term Alloca-tion	Long-Term Produc-tion	Long-Term Alloca-tion
Livestock	3,929	3,876	2,419	2,230	2,338	[b]2,419	2,301	2,419
Wildlife[c]	.....	.....	[d]175	[d]175	175	175	175	[e]147
Wild Horses[c]	.....	.....	[d]270	[d]270	75	75	75	75

[a] This number is constrained by wildlife and wild horse forage needs.

[b] It is assumed that livestock forage would continue to be allocated at the current average licensed use level. Permittees could activate grazing use up to the active preference level.

[c] Capacities not subjected to suitability criteria.

[d] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.

[e] Reflects an anticipated loss of lands through disposals, not a change in allocation.

Systems. Existing systems in C allotments which would be retained are as shown in Table 2-8.

Table 2-8

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	--	--	--
Deferred Rotation	6,473 (2)	--	6,473 (2)
Continuous Seasonal	51,750 (16)	--	51,750 (16)
Unallocated	--	--	--

Livestock Grazing Preference - Alternative 3

This alternative addresses the effects of the development of treatment potential up to grazing preference unit-wide. The objective of the alternative is to yield sufficient forage through both management and treatment to restore total grazing preference in the Pinyon Planning Unit. All livestock treatments proposed in Alternative 2 would be retained in this alternative, plus additional treatments not proposed earlier would be implemented. No wildlife or wild horse treatments would be proposed under this alternative. An intensive monitoring program similar to that proposed for M category allotments (see Appendix 5) would be implemented to provide a basis for any needed future management changes.

Management Actions

Major proposed management actions under this alternative include the following:

Adjustments to Capacity. Unit-wide there are 31 allotments whose average licensed use is greater than surveyed capacity. On these allotments, livestock stocking levels would be reduced to surveyed capacity over the short term. Additionally, wild horse numbers would be reduced from 552 to 130 or from 8,345 to 1,950 AUMs. Over the long term, both management and treatments would be utilized to restore all grazing capcity up to preference.

Developments. The types of developments - both treatments and facilities - which would be necessary to meet management objectives under this alternative are as shown in Table 2-9. Grazing systems are shown in Table 2-10.

Table 2-9

Treatments and Projected Animal Unit Months

	Chain-Burn-Broadcast-Chain	Burn-Drill	Chain-Burn-Broadcast	Chain-Broadcast-Chain	Chain-Broadcast	Plow-Drill	Prescribed Burn	Chain-Burn-Drill	Burn-Broadcast	Spray	Totals
Acres	45,795	14,125	4,045	3,500	5,475	1,420	7,865	12,640	8,190	1,500	104,555
AUMs	9,159	2,825	809	700	1,095	284	1,573	2,528	1,632	300	20,911

Facilities

Miles of pipeline------------211
Spring developments---------- 29
Troughs----------------------122
Miles of fence---------------262
Cattleguards----------------- 14
Tanks------------------------ 3
Reservoirs or catchments----- 7
Wells------------------------ 10
Windmills-------------------- 6

Table 2-10

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	242,193 (5)	334,714 (18)	576,907 (23)
Deferred Rotation	334,740 (21)	248,130 (15)	582,870 (36)
Continuous Seasonal	638,887 (45)	--	63,483 (11)
Remove Grazing	--	--	544 (2)
Unallocated	48,430 (2)	--	40,446 (1)

Estimated grazing stocking levels (AUMs) are shown in Table 2-11.

Table 2-11

Estimated Grazing Stocking Levels - Animal Unit Months (AUMs)

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term[a] Production	Short-Term Allocation	Long-Term[a] Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	75,990	78,513	78,513	124,589	124,589
Wildlife[b]	......	....	2,663	[c]2,663	[c]2,663	2,663	[c]2,663	2,663
Wild Horses[b]	......	....	8,345	[c]8,345	[c]1,950	1,950	[c]1,950	1,950

[a] This number is constrained by wildlife and wild horse forage needs.

[b] Capacities not subject to suitability criteria.

[c] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.

Resident Resource Values - Alternative 4

This alternative addresses the effects of the management of the Pinyon Planning Unit primarily for the resolution of conflicts with and/or the enhancement of resident resource values. The focus of the analysis is on the impacts of favoring such environmental elements as wildlife or wild horses in the proposal of grazing systems and treatments, the establishment of stocking levels, and the resolution of conflicts in forage allocations, treatments, and developments. A subalternative is devoted to wildlife and wild horses. The basis for this alternative derives from the "Opportunities" section of the URA 4. Under this alternative an intensive monitoring program similar to that proposed for M category allotments (see Appendix 4) would be implemented to ensure that overutilization of the forage resource would not occur.

Subalternative 1 - Wildlife

In this subalternative wildlife forage conflicts would be resolved primarily through implementing livestock grazing systems or reducing wild horse numbers which closely parallels the actions of the Livestock Grazing Preference Alternative. Treatments for wildlife would be essentially the same as those proposed in the Planning Alternative, but with additional protection for special habitat features such as aspen groves, springs, riparian areas, etc. which effect habitat quality but are not directly tied to forage availability. Also there would be elimination of livestock grazing on three allotments encompassing 1,140 AUMs until a specified vegetation response is achieved (up to 10 years required). Proposed developments and facilities are shown in Table 2-12.

Table 2-12

Treatments and Projected Animal Unit Months

	Chain-Burn-Broadcast-Chain	Burn-Drill	Chain-Burn-Broadcast	Chain-Broadcast-Chain	Chain-Broadcast	Plow-Drill	Prescribed Burn	Chain-Burn-Drill	Burn-Broadcast	Spray	Totals
Acres	56,356	11,000	2,360	3,500	5,475	8,819	4,260	8,700	5,790	1,000	107,260
AUMs	8,252	2,200	427	700	1,095	1,007	822	1,740	1,058	---	17,331

Facilities

Miles of pipeline--------118
Spring developments------ 27
Troughs------------------ 66
Miles of fence-----------222[a]
Cattleguards------------ 1
Tanks------------------- 1
Reservoirs-------------- 5
Wells------------------- 5
Windmills--------------- 5
Rain catchment guzzlers-- 42
Special habitat features- 39
Riparian areas---------- 9

---

[a] Includes 9 miles of fence for the protection of special habitat features and 39 miles of fence for the protection of 9 riparian areas.

Grazing systems proposed (Table 2-13) and estimated stocking levels (Table 2-14) are as shown.

Table 2-13

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	242,193 (5)	345,869 (19)	588,062 (24)
Deferred Rotation	334,740 (21)	248,130 (15)	582,870 (36)
Continuous Seasonal	638,887 (45)	--	44,888 (11)
Remove Grazing	--	--	--
Unallocated	48,430 (2)	--	48,430 (2)

Subalternative 2 - Wild Horses

This subalternative addresses the effects of favoring the resident wild horse herds in the Pinyon Planning Unit in both forage allocation and proposed management. Under this subalternative, the existing range of each herd unit would be maintained as it is; herd size in all but the Blawn Wash and the Sulphur herds would be retained at existing levels; the Blawn Wash herd would be allowed to increase from 82 to around 210 horses, and the Sulphur herd

Table 2-14

Estimated Grazing Stocking Levels - Animal Unit Months (AUMs)

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term[a] Production	Short-Term Allocation	Long-Term[a] Production	Long-Term Allocation
Livestock	86,121	105,121	60,757	75,990	78,191	[b]77,051	103,463	[c]102,024
Wildlife[d]	......	....	2,663	[e]2,663	[e]2,663	2,663	[e]5,425	5,425
Wild Horses[d]	......	....	8,345	[e]8,345	[e]2,010	2,010	[e]2,010	2,010

[a] This number is constrained by wildlife and wild horse forage needs.

[b] On 3 allotments livestock would not be allowed use for up to 10 years to improve wildlife forage species. This would result in non-use of 1,140 AUMs of livestock forage production.

[c] On 16 allotments an increase of 1,439 AUMs of livestock forage resulting from natural improvements of vegetation would not be available for allocation to livestock. Livestock numbers would be kept at current surveyed levels to improve wildlife forage on these allotments.

[d] Capacities not subject to suitability criteria.

[e] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of managed numbers.

would be allowed to increase from 135 to around 310 horses. Expanding both herds would improve the public's opportunity to observe wild horses. Enlarging the Sulphur herd, coupled with possibly reintroducing the "Spanish Barb" bloodline would help preserve what remains of the bloodline and reduce inbreeding and genetic deficiencies. Unit-wide, a number of water developments would be implemented to improve general herd distribution and to protect small springs and seeps. To accomplish these wild horse herd management activities, it would not be necessary to implement any new systems or rangeland treatments; also, there would be no new livestock or wildlife treatments or facilities proposed under this alternative. Livestock and wildlife forage allocations would be adjusted to surveyed capacity. Additional horse forage needs would be taken from livestock. Wildlife numbers would be maintained at existing levels into the future.

Treatments and Projected AUMs. No treatments would be proposed under this alternative.

Facilities Proposed

Miles of pipeline	0
Spring developments	37
Troughs	40
Miles of fence	0
Cattleguards	0
Tanks	0
Reservoirs	2
Wells	3
Windmills	0

Grazing systems would be as shown in Table 2-15 and estimated stocking levels in Table 2-16.

Table 2-15

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	242,193 (5)	--	242,193 (5)
Deferred Rotation	334,740 (21)	--	334,740 (21)
Continuous Seasonal	638,887 (45)	--	638,887 (45)
Remove Grazing	--	--	--
Unallocated	48,430 (2)	--	48,430 (2)

Table 2-16

Estimated Grazing Stocking Levels - Animal Unit Months (AUMs)

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term Production	Short-Term Allocation	Long-Term Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	75,990	74,883	74,883	78,237	78,237
Wildlife[b]	......	....	2,663	[c]2,663	2,663	2,663	[d]2,663	2,663
Wild Horses[b]	......	....	8,345	[c]8,345	[d]11,670	11,670	12,825	12,825

---

[a] Constrained by wildlife and wild horse forage needs.
[b] Capacities not subject to suitability criteria.
[c] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.
[d] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of projected numbers.

Livestock Maximization - Alternative 5

This alternative addresses the potential impacts of developing all possible treatment potential in the Pinyon Planning Unit and displays the total number of AUMs of livestock forage which theoretically could be produced. The major managerial actions which would be employed under this alternative would include allocations of forage going first to livestock with any residual going to maintain current wildlife numbers. Wild horses would be eliminated from the planning unit and all competitive forage which would have gone to them, would be allocated to livestock. Monitoring programs similar to those for M category allotments (see Appendix 5) would be employed to assure that maximization goals were attained and perpetuated. The most prominent feature of this alternative would be the number of acres of treatments and the total amount of facilities which would have to be constructed in order to meet maximization goals.

Management Actions

Major management actions proposed under this alternative include the following:

Adjustments to Capacity. Unit-wide there are 31 allotments where past average licensed use exceeds surveyed capacity. Over the short term livestock stocking levels on these allotments would be reduced to surveyed or monitored capacity. Over the long term, livestock capacities would be increased an overall 175 percent from surveyed capacity.

Developments. The treatments and facilities necessary for maximizing livestock are as shown in Table 2-17.

Table 2-17

Treatments and Projected Animal Unit Months

	Chain-Burn-Broad-cast-Chain	Burn-Chain-Broad-cast	Spray-Broad-cast-Chain	Burn-Drill	Plow-Drill	Burn	Totals
Acres	379,814	29,310	4,118	51,782	231,640	144,293	841,292
AUMs	81,258	5,862	823	10,356	46,328	28,859	173,386

Facilities

Miles of pipeline	325
Spring developments	51
Troughs	204
Miles of fence	922
Cattleguards	4
Tanks	5
Reservoirs and catchments	18
Wells	20
Windmills	35

Systems. In order to maintain the above vegetation improvements, grazing systems would have to be implemented on all allotments. Although such systems need to be worked out jointly with the permittees, the most probable types and the acreages affected are shown in Table 2-18.

Table 2-18

Grazing Systems

System	Existing Systems Acres (Allotments)	New Systems Acres (Allotments)	Total Proposed Systems Acres (Allotments)
Rest Rotation	242,193 (5)	904,380 (46)	1,146,573 (51)
Deferred Rotation	334,740 (21)	--	63,183 (11)
Continuous Seasonal	638,887 (45)	--	54,494 (11)
Remove Grazing	--	--	--
Unallocated	48,430 (2)	--	--

Table 2-19 shows estimated grazing stocking levels.

Summary

Table 2-20 displays a comparative summary of the major management actions that would take place under each alternative. Table 3 in the Summary, Summary of Long-Term Environmental Consequences presents a comparative summary of the projected long-term environmental consequences of implementing each of the alternatives.

Table 2-19

Estimated Grazing Stocking Levels - Animal Unit Months (AUMs)

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-Term[a] Production	Short-Term Allocation	Long-Term[a] Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	75,990	78,906	78,906	209,006	209,006
Wildlife[b]	......	....	2,663	[c]2,663	2,663	2,663	2,663	2,663
Wild Horses[b]	......	....	8,345	[c]8,345	[d]0	[d]0	[d]0	[d]0

[a] Constrained by wildlife and wild horse forage needs.

[b] Capacities not subject to suitability criteria.

[c] Survey capacities for wildlife and wild horses are estimated at the forage needs to meet demands of current numbers.

[d] All wild horses would be removed in this alternative.

Table 2-20
ALTERNATIVE SUMMARY TABLE

	Alternative 1		Alternative 2		Alternative 3		Alternative 4				Alternative 5	
	Cont. of Present Mgt. No Action		Planning Recommendations		Livestock Grazing Pref.		Resident Res. Values (Wildlife)		Resident Res. Values (Wild Horses)		Livestock Maximization	
VEGETATION TREATMENTS	(Acres)	(AUMs)	(Acres)	(AUMs)	(Acres)	(AUMs)	(Acres)	(AUMs)	(Acres)	(AUMs)	(Acres)	(AUMs)
Treatments	0	0	99,616	16,903	104,545	20,909	107,260	17,331	0	0	841,282	173,386
FACILITIES												
Spring Developments	0		20		29		[b]36		37		51	
Wells	0		3		10		5		3		20	
Reservoirs/ Catchments	0		5		7		47		2		18	
Tanks	0		-		3		1				5	
Troughs	0		65		122		66		40		204	
Miles of Pipeline	0		131		211		118				325	
Windmills	0		-		6		5				35	
	-		---		---		---		--		---	
Miles of Fence	0		152		262		222				922	
Cattleguards	0		4		14		1				4	
SYSTEMS	(Allotments)	(Acres)	(Allotments)	(Acres)	(Allotments)	(Acres)	(Allotments)	(Acres)	(Allotments)	(Acres)	(Allotments)	(Acres)
Rest Rotation	5	[a]242,193	18	535,555	23	576,907	24	588,062	5	242,193	51	1,146,573
Deferred Rotation	21	334,740	29	539,148	36	582,870	36	582,870	21	334,740	11	63,183
Continuous Seasonal	45	638,887	24	141,117	6	63,483	4	44,888	45	638,887	11	54,494
Custodial	--	-------	--	-------	5	10,341	11	-------	--	-------	--	-------
Remove Grazing	--	-------	--	-------	2	544	--	-------	--	-------	--	-------
Unallocated	2	48,430	2	48,430	1	40,446	2	48,430	2	48,430	--	-------
Totals	73	1,264,250	73	1,264,250	73	1,264,250	73	1,264,250	73	1,264,250	73	1,264,250
FORAGE CONSUMPTION	(AUMs)		(AUMs)		(AUMs)		(AUMs)		(AUMs)		(AUMs)	
Estimated Current Stocking												
Livestock	60,757		60,757		60,757		60,757		60,757		60,757	
Wildlife	2,663		2,663		2,663		2,663		2,663		2,663	
Wild Horses	8,345		8,345		8,345		8,345		8,345		8,345	
Totals	71,765		71,765		71,765		71,765		71,765		71,765	

(continued)

Alternative Summary concluded

	Alternative 1 Cont. of Present Mgt. No Action	Alternative 2 Planning Recommendations	Alternative 3 Livestock Grazing Pref.	Alternative 4		Alternative 5 Livestock Maximization
				Resident Res. Values (Wildlife)	Resident Res. Values (Wild Horses)	
Survey	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)	(AUMs)
Livestock	75,990	75,990	75,990	75,990	75,990	75,990
Wildlife	2,663	2,663	2,663	2,663	2,663	2,663
Wild Horses	8,345	8,345	8,345	8,345	8,345	8,345
Totals	86,999	86,999	86,999	86,999	86,999	86,999
Short Term (5 yrs)						
Livestock	60,757	63,820	78,513	77,051	74,883	78,906
Wildlife	2,663	2,663	2,663	2,663	2,663	2,663
Wild Horses	8,345	3,225	1,950	2,010	13,007	0
Totals	71,765	69,708	83,126	81,724	90,553	81,569
Long Term (20 yrs)						
Livestock	60,757	88,103	124,589	102,024	78,237	209,006
Wildlife	2,663	5,407	2,663	5,425	2,663	2,663
Wild Horses	8,345	3,225	1,950	2,010	14,962	0
Totals	71,765	96,735	129,202	109,459	95,862	211,669

[a] Existing systems already in effect.

[b] Includes 9 riparian area.

CHAPTER 3

EXISTING ENVIRONMENT

INTRODUCTION

This chapter provides descriptions of the environmental elements that would be affected through the implementation of any one or a combination of the alternatives described in Chapter 2. These descriptions are given in two levels of detail: (1) A general overview of the major environmental elements is provided and (2) environmental elements that would be significantly affected are described in detail so that specific impacts can be assessed in Chapter 4.

The Setting - An Overview

The geographic setting is typical of the basin and range province with a mixed topography of a series of small mountain ranges separated by fairly broad flat alluvial valley bottoms. Mountain elevations vary in the 8,000 and 9,000 foot range while valley floors range in elevation between 4,000 and 6,000 feet.

Multiple use resource management within this setting involves such diverse environmental elements as soils, vegetation, watershed, threatened and endangered species, water resources, wildlife, wild horses, cultural resources, visual resources, forestry, recreation, climate, minerals, geothermal resources, socioeconomics, etc. Concern for these elements has been focused during the planning and public participation process into four major issues - Forage Management, Oil and Gas Categories, Fire Management, and Right-of-Way and Utility Corridors. Of these, this Environmental Impact Statement (EIS) directly addresses the issue of Forage Management. The other three issues are accommodated through the planning system in the Management Framework Plan. On the basis of input from individual specialists as well as public involvement, the highest order of detailed analysis has been devoted to the following environmental elements: vegetation, livestock, wildlife, wild horses, and socioeconomics. A lower level of detail is presented, as needed for specific alternatives on the following topics: soils, watershed, and land use. Environmental elements which through the planning system and public comments have shown very little interaction with the issue of forage management or which would be accommodated by memoranda of understanding or through consultations and consequently receive only minimal attention in the EIS are as follows: fisheries, cultural resources, visual resources, recreation, wilderness, climate, air quality and topography/geography.

VEGETATION

The basis for all grazing management in the Pinyon Planning Unit is tied directly to management of the vegetation resource. Proper management requires consideration of not only the needs of the various grazing species using the area, but also the physiological needs of the vegetation resource itself. A considerable amount of vegetation data has been collected (see Appendix 1) and assimilated for analysis in the rangeland management decision process. This information is organized and presented below on the basis of: (1) the vegetation types themselves and (2) the uses or consumption of forage.

Principal Vegetation Types

Vegetation types were determined on the basis of specific plant dominance (composition by weight), aspect (visibility), and desirability as forage species. These vegetation types should be considered only as a means of categorizing the diverse vegetation systems that occur in the Pinyon Planning Unit. Vegetation types and acreages that were found in the Pinyon Planning Unit are shown in Table 3-1, Vegetation Types. These vegetation types are related to one another within the framework of ecological condition and apparent ecological trend.

Threatened and Endangered Plant Species

Presently there are no known occurrences of Federally listed threatened or endangered plant species in the planning unit.

Informal consultation with the Fish and Wildlife Service (FWS) has resulted in a list of 11 species that are candidates for official listing as threatened or endangered and that may occur in the planning unit (Memo from Acting Area Manager Area 5, U.S. Fish and Wildlife Service to District Manager, Bureau of Land Management, March 26, 1982). Further consultation with the FWS will be conducted under Section 7 of the Endangered Species Act of 1973, as amended.

Candidate species which may occur in the planning unit are listed below.

Common Name	Scientific Name
Calloway milk-vetch	*Astragalus callithrix*
Sand-loving wild buckwheat	*Eriogonum ammophilum*
Tunnel Springs beardtongue	*Penstemon concinnus*
Compact catseye	*Cryptantha compacta*
Limestone wild buckwheat	*Eriogonum eremicum*
Great Basin fishhook cactus	*Sclerocactus pubispinus*
Jones globe-mallow	*Sphaeralcea caespitosa*
Low beardtongue	*Penstemon nanus*
no common name	*Lepidium ostleri*
no common name	*Trifolium andersonii* var. *friscanum*
no common name	*Cymopterus basalticus*

Ecological Condition

Ecological condition is a relative measure of how closely current plant composition (by weight) on a given plant community/soil site (range site) matches the potential composition if the site were in a climax condition. That is, the ecological condition classification of the plant/soil site reflects the seral stage of the site. There are four such classifications for the vegetation types in the Pinyon Planning Unit - low, medium, high, and climax - with each designation depending upon the percentage of the potential climax composition being represented in the existing composition as follows:

Table 3-1

VEGETATION TYPES

Vegetation Type	Major Plant Species Common Name	 Scientific Name	Typical Range Sites	Total Acres	Percent of Inventoried Acreage
Grass	Wheatgrass	*Agropyron* spp.	452-Semidesert loam	110,207	7
	Indian ricegrass	*Oryzopsis hymenoides*	453-Semidesert gravel loam		
	Needle-and-thread	*Stipa comata*	479-Desert sandy loam		
	Sand dropseed	*Sporobolus cryptandrus*	473-Desert loam		
			458-Semidesert stoney loam		
Sagebrush	Sagebrush	*Artemisia* spp.	451-Semidesert loam	580,394	37
	Rabbitbrush	*Chrysothamnus* spp.	452-Semidesert loam		
	Antelope bitterbrush	*Purshia tridentata*	473-Desert loam		
	Mormon tea	*Ephedra* spp.	455-Semidesert shallow hardpan		
	Winterfat	*Eurotia lanata*	459-Semidesert stoney hills		
Mountain Shrub	Mountain mahogany	*Cercocarpus* spp.		23,429	1
	Antelope bitterbrush	*Purshia tridentata*	425-Mountain loam		
	Cliffrose	*Cowania mexicana stansburiana*	421-Mountain stoney loam		
	Serviceberry	*Amelanchier* spp.			
	Manzanita	*Arctostaphylos* spp.			
Conifer	Ponderosa pine	*Pinus ponderosa*	415-High mountain shallow loam	8,720	1
	Douglas fir	*Pseudotsuga menziesii glauca*	416-High mountain stoney loam		
	Bristlecone pine	*Pinus aristata*	420-Mountain loam		
	White fir	*Abies concolor*			
Barren			Rock outcrops	26,324	2
			Hardpans		
			Playas		
Pinyon-Juniper	Single leaf pinyon	*Pinus monophylla*	435-Upland shallow loam	577,201	37
	Pinyon pine	*Pinus edulis*	460-Semidesert shallow hardpan		
	Utah juniper	*Juniperus osteosperma*	461-Semidesert shallow loam		
			464-Semidesert stony loam		
			432-Upland loam		

(continued)

Table 3-1 concluded

Vegetation Type	Major Plant Species Common Name	Scientific Name	Typical Range Sites	Total Acres	Percent of Inventoried Acreage
Broadleaf Trees	Aspen	*Populus tremuloides*	424-Mountain stoney loam	92	Trace
	Snowberry	*Symphoricarpos* spp.	417-High mountain loam		
Saltbush	Saltbush	*Atriplex* spp.	478-Desert Salt Flats	108,032	7
	Greasewood	*Sarcobatus* spp.	471-Desert Flats		
	Winterfat	*Eurotia lanata*	485-Semidesert stoney loam		
	Bud sagebrush	*Artemisia spinescens*	462-Semidesert alkali flats		
	Black sagebrush	*Artemisia arbuscula nova*			
Greasewood	Black greasewood	*Sarcobatus vermiculatus*	462-Semidesert alkali flats	33,166	2
	Nuttall saltbush	*Atriplex nuttallii*	478-Desert salt flats		
	Pickleweed	*Allenrolfea occidentalis*	476-Desert Alkali flats		
	Inland saltgrass	*Distichlis stricta*			
	Alkali sacaton	*Sporobolus airoides*			
Winterfat	Winterfat	*Eurotia lanata*	470-Desert bottoms	49,927	3
	Douglas rabbitbrush	*Chrysothamnus viscidiflorus*	475-Desert siltflats		
	Indian ricegrass	*Oryzopsis hymenoides*			
	Bottlebrush squirreltail	*Sitanion hystrix*			
Desert Shrub	Mormon tea	*Ephedra* spp.	474-Desert sand	38,818	2
	Spiney hopsage	*Grayia spinosa*	480-Desert stoney loam		
	Horse brush	*Tetradymia* spp.			
Half shrub	Snake weed	*Gutierrezia* spp.	458-Semidesert stoney loam	6,171	Trace
	Douglas rabbitbrush	*Chrysothamnus viscidiflores*	472-Desert gravelly loam		
	Winterfat	*Eurotia lanata*	453-Semidesert gravelly loam		
	Bottlebrush squirreltail	*Sitanion hystrix*			
Annuals	Cheatgrass	*Bromus tectorum*	470-Desert bottoms	16,049	1
	Halogeton	*Halogeton glomeratus*	471-Desert flats		
	Russian thistle	*Salsola kali tenuifolia*			
Total				[a]1,579,430	100

[a] Includes Federal and non-Federal lands in the Pinyon Planning area, including grazing lands administered by the Ely and Richfield Districts.

Class	Percent of Potential
low	0 - 25%
medium	26 - 50%
high	51 - 75%
climax	76 - 100%

In the Pinyon Planning Unit, the number of areas in each ecological condition class is as follows:

Ecological Condition	Acres	Percent of Area Classified
Low	189,715	14.9
Medium	663,394	52.4
High	369,507	29.2
Climax	28,805	2.3
Not Classified	14,829	1.2

Ecological condition is not an indicator of range or habitat condition or forage production nor is it a reflection of management objectives. In other words, a site in high or climax ecological condition may not produce more forage than the same site in a low or medium ecological condition. For this reason, ecological condition can be a useful tool on a site specific basis, but must be used with caution when making comparisons on a planning unit-wide basis.

Ecological Trend

Apparent ecological trend is an indicator of the relative direction in which a given plant/soil type is changing, relative to the potential plant composition under climax condition for that site. Sites which are demonstrating increases in the plants that would be a part of the climax composition are said to be in upward trend while sites which have climax species being replaced by plant species not present in the potential climax composition are in downward trend. In the Pinyon Planning Unit, the apparent ecological trends on public land are classed as follows:

Apparent Trend	Acres	Percent
Up	129,246	10.2
Static	925,381	73.2
Down	194,212	15.4
Unclassified	15,411	1.2

The same cautions cited for ecological condition also apply in interpreting ecological trend. An upward ecological trend does not necessarily mean an improvement in livestock or wildlife forage production. For instance, an upward trend on a sagebrush site could mean that the density of desirable forage plants on the site could be declining. Also, it should be noted that the apparent ecological trend classifications which have been registered for the Pinyon Planning Unit are "one point in time" observations and are used only as a starting point for management. Trends have to be verified or adjusted over a long period of time through an intensified monitoring program.

Forage Production

The survey of the Pinyon Planning Unit determined by the Soil-Vegetation Inventory Method (SVIM) has provided estimates of forage production in the unit for cattle and sheep exclusively (single use carrying capacities) and for cattle and sheep capacities which have been constrained by the dietary requirements of existing populations of elk, deer, antelope and wild horses. In arriving at these estimates, consideration was given to dietary preference of each species, suitability, utilization levels, seasons of use, etc. These production figures are given in table 3-2, Pinyon Planning Unit Forage Production below.

Table 3-2

Pinyon Planning Unit Forage Production

	Forage Needs At Existing Stocking (AUMs)	Surveyed Livestock Forage Production (AUMs)
Livestock - (from suitable & limited suitable at proper levels of utilization)	60,757	79,319
Wildlife Forage - (total needs from all lands suitable, limited, and unsuitable)	2,663	------
Wildlife Competitive Forage	-----	-413
Wild Horses (total needs from all lands suitable, limited, and unsuitable)	8,345	------
Wild Horses Competitive Forage	-----	-2,916
Totals	71,765	75,790

The total amount of forage available to wildlife and wild horses was not determined during the survey, but rather only that portion of forage that would be "competitive" with livestock if dietary needs of existing populations of wildlife and wild horses were to be met.

Dietary Preference

The dietary preference of a grazing animal refers to the mix of plant species that animal would normally consume out of those that are available within its grazing range. Knowing the season of use and the phenology (the growth stages of plants) of the mix of plants in the grazing area combined with the dietary preference of the using animals is extremely important in determining how the area can be best managed on an ongoing basis. This information also becomes very important in meeting the forage needs of different species of grazers competing for forage in the same area. The portions of their respective diets that overlap become very important in determining appropriate management actions because dietary overlap, when it exceeds the plants' abilities to sustain the grazing pressure, could result in both damaging overutilization of the plants and dietary deficiencies for the animals.

Suitability

The suitability of an area is a measure of the usability of that area for livestock grazing. To be suitable, an area must produce available livestock forage at a rate of no worse than 32 acres per AUM, have slopes of no more than 50 percent, have a soil surface factor (SSF - see Glossary) of no more than 60, and a distance from water of no more than 3 miles. These criteria generally reflect the grazing habits of livestock which will prefer the lower slopes to steep hillsides and will not range far from water sources even if their preferred forage plants have been "grazed out" close in and abundant forage is available on the steeper slopes or in areas farther from water. Although similar relationships probably exist for wildlife and wild horses, they have not been established for the Pinyon Planning Unit. Therefore, the assumption is that suitability considerations would constrain the total number of acres in the unit from which livestock forage allocations could be made but would not constrain those for wildlife or wild horses.

Additionally, there is the classification of limited suitable areas. Lands classified as limited suitable do not contain water during the grazing season, but water is hauled by the permittee to areas utilized by livestock, and snow is utilized by sheep on winter ranges. Potentially suitable areas were designated where either the current production of available forage was not sufficient to provide a grazing capacity of worse than 32 acres/AUM but through treatment production could be increased, or the distance from water was in excess of 3 miles where livestock forage was available or had potential for availability.

Unsuitable areas were designated where: (1) the current production of available forage was not sufficient to provide grazing capacity of less than 32 acres per AUM and production could not be improved through management or treatments (primarily barren areas), (2) SSF was greater than 60, (3) slopes were greater than 50 percent, or (4) the distance from a water source was greater than 3 miles.

Forage produced on potentially suitable and unsuitable areas was not considered in determining the available livestock forage production.

Table 3-3, Suitability, displays the acres of suitable, limited suitable, potentially suitable, and unsuitable for the Pinyon PU.

Table 3-3

Suitability

	Acres
Suitable	735,282
Limited Suitable	98,556
Potential Suitable	375,651
Unsuitable	54,761
Total	1,264,250

Utilization

Utilization is the proportion of the current year's forage production that is consumed or destroyed by grazing animals. Utilization data were collected during the inventory for the sole purpose that plants which had received utilization could be "reconstructed" and the plant weight at full growth could be estimated. Detailed utilization studies identifying areas of slight, light, moderate, heavy and severe use, have only been conducted on a limited number of allotments and may be found in individual allotment files at the Beaver River Resource Area.

Knowledge of the quantity of forage harvested by livestock each grazing season is essential to proper management of rangelands. Utilization data are valuable in evaluating the effectiveness of past range management practices and in establishing future stocking levels.

Table 3-2 (Pinyon Planning Unit Forage Production) summarizes the results of the survey for the Pinyon Planning Unit in terms of the preceding discussions.

Phenology

Phenological states are an important consideration in the management of rangelands. Knowledge of the dates certain phenological stages occur, especially the seed ripe stage, is necessary before effective grazing systems and seasons of use can be established. Table 3-4 presents various phenological stages observed within the planning unit for several key forage and other selected species. Phenological data in this table represent observations made at only a few selected sites in the unit but are expected to provide an accurate representation of most of the planning unit.

Table 3-4
Phenological Stages for Selected Plant Species on the Pinyon Planning Unit

Common Name	Scientific Binomial	Begin Growth	Seed Ripe
Grasses			
Crested wheatgrass	Agropyron cristatum	3-15	7-15
Curly grass	Hilaria jamesii	4-15	6-30
Indian ricegrass	Oryzopsis hymenoides	3-15	7-1
Sand dropseed	Sporobolus cryptandrus	5-1	7-30
Needle-and-thread	Stipa comata	3-15	6-30
Forbs			
Globe mallow	Sphaeralcea spp	3-15	6-30
Tansy mustard	Descurainia spp	3-1	6-1
Russian thistle	Salsola kali tenuifolia	5-1	8-30

(continued)

Table 3-4 concluded

Common Name	Scientific Binomial	Begin Growth	Seed Ripe
Shrubs			
Black sagebrush	*Artemisia arbuscula nova*	4-15	10-1
Bud sagebrush	*Artemisia spinescens*	2-15	6-10
Fourwing saltbush	*Atriplex canescens*	4-15	9-30
Winterfat	*Eurotia lanata*	3-15	8-11
Antelope bitterbrush	*Purshia tridentata*	4-15	6-30

LIVESTOCK GRAZING

The Pinyon Planning Unit contains 73 livestock grazing allotments. Two allotments, Mountain Home and No Grazing, are currently not allocated to livestock grazing; the remaining 71 allotments are utilized by 59 livestock operators. A total of 10,111 cattle, 24,611 sheep, and 6 horses are currently authorized to graze on the public lands within these allotments.

Kinds of Operation

Most of the allotments (57 out of the 71 currently authorized), are grazed by cattle only. Another nine allotments are grazed by sheep only, four allotments are utilized by both sheep and cattle, and one is grazed by both cattle and horses. Most permittees run a cow-calf or ewe-lamb operation, except for occasionally retaining calves as herd replacements. Kinds of livestock operations in the Pinyon PU are as follows:

Existing Livestock Use	Number of Allotments	Acres
Cattle	57	785,481
Sheep	9	143,747
Cattle and Sheep	4	268,569
Cattle and Horse	1	18,023
Unallocated	2	48,430

Management Practices

The seasons of use of the allotments on the Pinyon Planning Unit vary from as short as 1-1/2 months in spring to yearlong grazing. The most common period of use is throughout late fall, winter, and spring. Currently 45 allotments are not managed under grazing systems that provide rest during the grazing season. Of special concern are the 35 allotments that receive potentially damaging continuous spring grazing.

To this date, 11 Allotment Management Plans (AMPs) outlining range management (including grazing systems) and improvements have been implemented in the Pinyon unit. On several additional allotments, grazing systems have been established in cooperation with the BLM Beaver River Resource Area Office (URA 3, Range). These systems appear to be operational and seem to complement the physiological needs of the vegetation. Current grazing practices in the Pinyon PU are as follows:

Present Grazing Management	Number of Allotments	Acres
Allotments with Grazing Systems	26	576,933
Allotments that Receive Spring Grazing without Rest	35	534,176
Allotments that Receive Continuous Seasonal Grazing Other Than Spring	10	104,711
Unallocated	2	48,430
Totals	73	1,264,250

Rangeland Production and Current Allocations

The forage estimated to be available to livestock in the planning unit as well as current allocation levels are as follows.

	Active Preference	Total Preference	Average Actual Use	Surveyed Production
Animal Units of Forage	86,121	105,433	60,757	75,990

Although the survey indicates that on a unit-wide basis there are 15,233 AUMs of forage available above the total currently being consumed by livestock an apparent overutilization of forage is occurring on 31 allotments.

WILDLIFE

The Pinyon Planning Unit contains an estimated total of 333 different wildlife species. Included in this total are 69 species of mammals, 237 species of birds, 21 species of reptiles, and 6 species of amphibians (URA 2, Animals).

During the 1979-80 SVIM inventory, information concerning wildlife and their habitat was collected. A majority of this wildlife inventory effort was designed to collect wildlife habitat quality information and identify conflicts between wildlife and other resource users. Ecological condition and trend information were not used in determining wildlife habitat quality.

Discussions of wildlife in this document will be limited to the habitat quality of those species which: (1) have received a great deal of interest from both the general public and the Utah Division of Wildlife Resources (UDWR), and (2) present the potential for receiving substantial impacts from changes in range use. The following discussions will primarily be concerned with three big game species: mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), and elk (*Cervus elaphus*). All three of these species are in great demand as game animals and are often the focus of management by UDWR. Sage grouse (*Centrocercus urophasianus*) are also considered here because of their game bird status and the constraints that places on some management actions.

Big Game

Mule Deer

Mule deer are the most numerous of the big game species within the planning unit. The Pinyon unit currently contains an estimated 1,287 mule deer requiring 1,591 AUMs (UDWR, 1980). The prior stable (long-term average) mule deer population within the unit was determined by UDWR (1980) and has been estimated at 2,482 (URA 3, Wildlife). Prior stable numbers would require 3,041 AUMs.

Most mule deer habitat within the unit (86 percent) is considered to be in poor or fair condition (URA 3, Wildlife). Of the 829,441 acres of mule deer habitat 14 percent has been classified as being in good condition, 42 percent as fair, and 44 percent as poor. While much of the habitat has not been classified in the better categories, total deer forage availability does not appear to be a limiting factor to deer populations.

The three major problems in mule deer habitat currently identified are: (1) much of the existing browse has become decadent and is producing less usable forage than its potential, (2) there is a general lack of plant diversity, especially forbs, and (3) a general lack of water. These problems have resulted in lower quality habitat. At the present time, 28 allotments in mule deer habitat are overgrazed. Overgrazing has resulted in decreased plant diversity and has allowed undesirable plant species to invade, reducing habitat quality.

Summer range for mule deer (see Figure 3-1) is limited in the planning unit (URA 3, Wildlife), and is, therefore, believed to be their most important range. Of the 67,194 acres of mule deer summer range 38 percent is in good, 37 percent is in fair, and 25 percent is in poor condition. Mule deer summer range is also heavily used by livestock and wild horses. All of these species tend to prefer succulent forage, primarily forbs, during the summer months. Peterson et al., (1978) have found that the availability of succulent forbs can affect mule deer reproduction. Succulent forage is most prominent around or near wildlife special use areas and is a major component of riparian habitat. Heavy use by livestock, wild horses, and wildlife has resulted in 34 wildlife special use areas and 117 acres of riparian habitat being in poor condition.

Pronghorn Antelope

Scattered bands of antelope (Figure 3-2) occur throughout much of the planning unit, especially sagebrush-grass habitat types in the broad valley areas. The UDWR has estimated the population of antelope to be 600 and has established a long-term population goal of 1,070 for the Pinyon Planning Unit. Current antelope numbers require 755 AUMs and would require 1,313 AUMs if long-term population goals were reached (URA 3, Wildlife).

Habitat problems with pronghorn are similar to those encountered with mule deer. Currently 20 allotments in antelope range are being overgrazed which has led to declines in stands of desirable shrub species, invasions by pinyon-

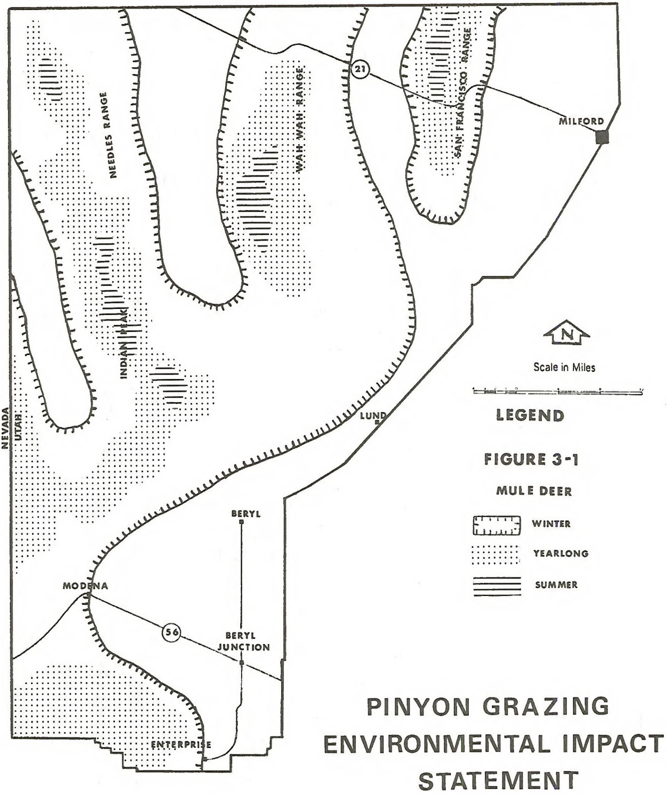

FIGURE 3-1

MULE DEER

PINYON GRAZING ENVIRONMENTAL IMPACT STATEMENT

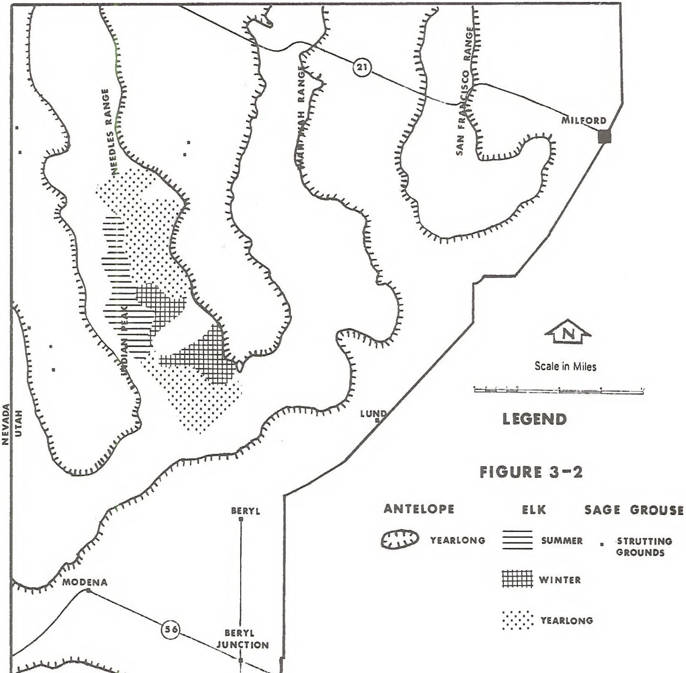

FIGURE 3-2

PINYON GRAZING ENVIRONMENTAL IMPACT STATEMENT

juniper and a general lack of plant diversity. Most of the existing pronghorn habitat is classified as poor or fair. Of the total 623,457 acres of antelope habitat 11 percent is good, 41 percent is fair, and 48 percent is poor. Most of the pronghorn habitat problems are a result of the lack of diversity in the vegetation. Beale and Smith (1970) found pronghorn to demonstrate a preference for succulent forbs throughout the year, relying heavily on browse species, primarily black sagebrush, bud sagebrush, and fourwing saltbush when forbs are not available. Past grazing use by sheep has caused the elimination of black sagebrush from large areas (URA 3, Wildlife).

Elk

Elk were transplanted in the western portion of the planning unit (Indian Peak Figure 3-2) in the late 1940s and again in 1980. The current elk population numbers approximately 60 (UDWR, 1980) of which approximately 54 use public lands and require 317 AUMs. The UDWR has established a target population of 200 animals for the Indian Peak elk herd of which 178 would be using public lands and would require 1,053 AUMs. Most of the elk habitat within the unit is in poor to fair condition (URA 3 Wildlife). At the present time, three allotments are overutilized by livestock and wild horses which has contributed to present habitat quality.

The summer range component of elk habitat is considered to be the limiting factor to elk populations in the Pinyon PU. Of the total 13,631 acres identified as elk summer range 12 percent is considered in good, 46 percent fair, and 42 percent in poor condition. Quality summer range is limited due to: (1) the lack of higher elevations and corresponding greater rainfall and (2) the heavy use of existing summer range by wild horses and livestock. The general lack of both vegetation diversity and water are also important elk habitat problems encountered within the unit.

There are four wildlife special use areas and 89 acres of riparian habitat used by elk. Use by livestock, wild horses, and wildlife has resulted in these areas being in poor to fair condition.

Upland Game Birds

Sage Grouse

Sage grouse have been documented to occur on approximately 65,808 acres within the planning unit boundary.

Habitat requirements of sage grouse are centered around sagebrush. Various sagebrush habitat types are required during different times of the year: tall, dense sage during severe winters, open sage canopy interspersed with more moist areas to allow greater forb production during brood rearing, large open areas or expanses of low sage growth for strutting grounds, and various other habitat types for the remainder of the year (BLM, 1974).

Of these habitat types the most important are those providing strutting grounds. These areas have been shown to be the center of yearlong activity with reproductive success being dependent upon their ability to occupy these areas during the spring without disturbance. Treating such areas has resulted in abandonment and declines in nesting activity (Wallestad, 1975). Seven strutting areas have been identified in the planning unit (Figure 3-2).

Current sage grouse strutting grounds are believed to be in fair condition. However, a lack of necessary plant diversity for successful brood rearing exists in some areas due to livestock grazing (URA 3, Wildlife). Therefore, sage grouse and their habitat may present some constraints to multiple use management.

Threatened and Endangered Species

Three threatened and endangered animal species occur in the planning unit: the bald eagle (Haliaecetus leucocephalus), the peregrine falcon (Falco peregrinus), and the Utah prairie dog (Cynomys parvidens). The bald eagle occurs sporadically throughout the planning unit during the winter, feeding primarily on blacktailed jackrabbits (Lepus californicus) and carrion. No specific critical areas for bald eagles exist in the planning unit (Bald Eagle Essential Habitat Report, 1980). No conflicts with bald eagles have been identified.

Utah prairie dogs are present in four locations and occupy about 145 acres of public land. These colonies are the result of a cooperative transplant program between the U.S. Fish and Wildlife Service, UDWR, and the Bureau of Land Management. The Utah prairie dog requires a diversity of forbs, grasses, and browse and is found primarily on seedings (URA 3, Wildlife). No specific conflicts have been identified with the prairie dog.

The peregrine falcon occurs in the planning unit as a rare migrant. No nest records of this species are reported for the PU and livestock grazing management should have no adverse effects on this species.

Summary of Existing Problems Affecting Wildlife

The primary problem affecting wildlife in the Pinyon Planning Unit is the quality of habitat. Much of the big game habitat in the area is in poor to fair condition, with plant diversity and water availability being limited. Direct competition between mule deer, livestock, and elk for limited summer range is resulting in heavy use and deterioration of these areas. Competition for forage is most evident between species with similar diets, particularly antelope and sheep, and elk and livestock/wild horses.

WILD HORSES

Currently nine wild horse herds inhabit the Pinyon Planning Unit with a total current population of 552 head (Figure 3-3). Wild horse numbers by herd are as follows:

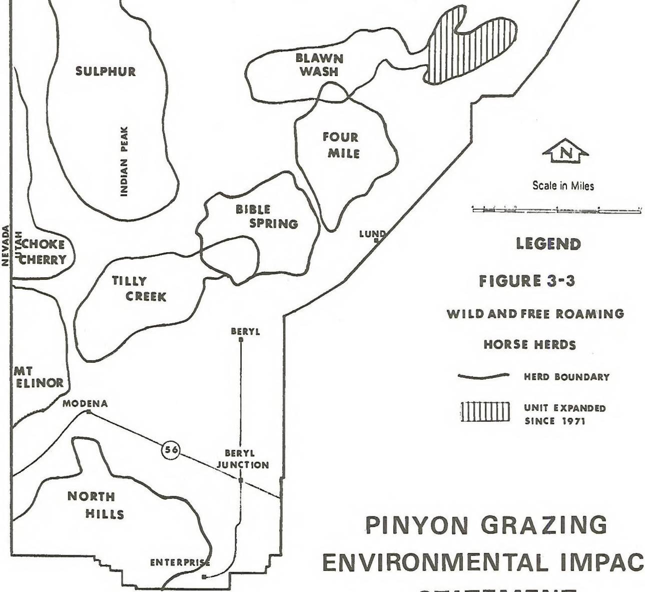

FIGURE 3-3

WILD AND FREE ROAMING HORSE HERDS

PINYON GRAZING ENVIRONMENTAL IMPACT STATEMENT

Herd Unit	Current Levels
Bible Spring	47
Blawn Wash	82
Chokecherry	25
Four Mile Wash	49
Frisco	68
Mt. Elinor	37
North Hills	62
Sulphur	135
Tilly Creek	47
Totals	552

In 1971, when the Wild and Free-Roaming Horse and Burro Act was passed, there were an estimated 215 wild horses in 6 herds within the planning unit. Horse herds have increased an average of 15 to 20 percent yearly since that time. Horse roundups and adoption programs have accounted for the removal of 119 horses since 1971.

Several conflicts with wild horses have been identified. Horse use in conjunction with livestock and wildlife use is resulting in the overutilization of vegetation on 284,151 acres of wild horse range in 19 allotments. This occurs primarily in the Mt. Elinor, North Hills, Bible Spring, and Tilly Creek herd units.

Water is limited in the PU resulting in all grazing animals heavily relying on the same water sources. The trampling effects of all users has resulted in the deteriorated condition of 31 important water sources unit-wide (URA 3, Range). These water sources consist primarily of seeps, spring, and riparian areas, and utilization by all users is contributing to the poor condition of vegetation surrounding these areas.

Horses are not as restricted by natural barriers as livestock, allowing them to range over a wide area. Fences, however, depending on their location, can restrict the "wild and free-roaming nature" of wild horses limiting their movements. At the present time, fences are not believed to be significantly restricting wild horse movements.

Summary of Existing Problems Affecting Wild Horses

Major problems affecting wild horses result from conflicts with other resources and their management. Overutilization in some areas is resulting in deteriorated wild horse range. Competition with livestock and wildlife for available water and their trampling effects are resulting in lower quality of an already limited resource. While not a serious problem at the present, fences can and do tend to restrict wild horse movements and affect their free-roaming nature.

SOCIOECONOMICS

Data regarding the size, organization, and budget of the typical livestock operation in the Pinyon Planning Unit were collected and analyzed by the Economic Research Service (ERS), U.S. Department of Agriculture. These data represent a combination of ranch budgets calculated by ERS for subregions of the United States and actual responses made by a panel of Pinyon livestock producers. Ranch budgets established for the appropriate subregion replace the need for a complete sample survey while data from interviews of local producers allow an "alignment" of the average budgets established for the geographically larger subregion.

Livestock Operations

Cattle ranching is the predominant form of livestock operation on the Pinyon Planning Unit although approximately 25,000 head of sheep are also grazed. Nearly all of the cattle setups are cow-calf operations and most sheep setups are organized as ewe-lamb operations.

For the purpose of analysis livestock operations were broken down into different categories according to their size. Cattle operations were broken down into two size categories: small (0-99 cows) and large (over 100 cows). Sheep setups were categorized as small (0-499 head) and large (over 500 head). Cattle operations were also divided by their season of use of BLM forage. Two season-of-use categories were established for both sizes of cattle operations: (1) summer and (2) fall-winter-spring. Large cattle operation categories also include a "yearlong" division.

The estimated average number of head sold annually for each category of cattle operation is:

	Small (0-99 cows)		Large (over 100 cows)		
	Summer	Fall, Winter, Spring	Summer	Fall, Winter, Spring	Yearlong
Steer Calves	12	12	40	58	34
Heifer Calves	6	8	16	24	35
Yearling Steers	--	6	39	58	15
Yearling Heifers	1	2	20	28	16
Cull Cows	5	9	40	59	36

Estimated average sales for sheep operations are:

	Unit	Small (0-499 head)	Large (over 500 head)
Slaughter Lambs	Head	116	848
Feeder Lambs	Head	77	566
Ewes	Head	73	329
Wool	Pounds	176	1,285
Wool Incentive Payment	Dollars	1,549	11,308
Unshorn Lamb Payment	Hundredweight	185	1,357

Average selling weights of cattle on the Pinyon Planning Unit are shown below.

	Approximate Selling Weights
Steer Calves	420 lbs.
Heifer Calves	380
Yearling Steers	800
Yearling Heifers	680
Cull Cows	920

Calving may occur throughout most of the year in the unit resulting in a wide variation in the weight of calves being sold.

Dependence on BLM Forage

Dependence on BLM forage is one of the most important parameters in the analysis of socioeconomic impacts resulting from changes in BLM range management. Ranch operations having a high degree of dependence on BLM forage would be most likely to receive significant impacts following, for example, a drastic reduction in permitted stocking levels. The following table presents approximate percentages of BLM forage dependency.

Type of Operation	Season of Use of BLM Forage	Dependence on BLM Forage[a]
Small, Cattle	Summer	44 percent
Small, Cattle	Fall-Winter-Spring	38 percent
Large, Cattle	Summer	38 percent
Large, Cattle	Fall-Winter-Spring	25 percent
Large, Cattle	Yearlong	79 percent
Small, Sheep	--	49 percent
Large, Sheep	--	33 percent

[a] Based upon dietary requirements, not necessarily AUMs.

Large cattle operations utilizing public lands yearlong are obviously the most dependent on BLM forage. However, all classes of livestock operations exhibit a high dependence on BLM forage.

Ranch Budgets

The economic analyses of livestock production throughout this document are based on a combination of ranch budgets (a tabular presentation of cash flows within the ranching enterprise) and linear programming models. Linear programming utilizes estimated production functions (equations built from the ranch budgets) to identify production bottlenecks and the importance of various inputs to the ranch enterprise. These have been provided to BLM by ERS. Ranch budgets for the seven operator types identified in the planning unit are provided in Tables 3-5 and 3-6. Based upon these budgets, and through the use of linear programming, it is possible to project values for such parameters as herd size, net income, etc., given a change in any input such as BLM forage.

The individual entries in these ranch budgets should be considered with the knowledge that these values are only estimates and may not represent the exact cash flows for any given individual ranch enterprise. These figures do, however, offer a good starting point for the analysis of the impacts of socioeconomic changes in rangeland management.

The first, most obvious, point brought up in Tables 3-5 and 3-6 is that cattle ranching appears to be a losing proposition in the Pinyon Planning Unit. It must be remembered that these figures represent the average livestock producer. Some cattle producers may indeed make a profit while others lose more than the budgets suggest. Possible reasons for staying in the cattle business in spite of such conditions are discussed below.

Cattle ranching in southwestern Utah is, in general, not a very profitable business. Scarce forage and the corresponding low stocking densities, a lack of nearby metropolitan markets, and a lack of suitable land and water necessary for hay production are all factors which contribute to the high costs/low profits of cattle production in the arid regions of the area. However, profits from sales of cattle may not always be the motivating factor of ranchers. Some of the more common reasons for accepting a net loss may be: (1) ranching is a desirable sideline but not the major source of income, (2) a desire to continue family traditions either for the rancher himself or for his offspring, and (3) an effort to defray the costs of holding land and BLM grazing permits as a speculatory investment.

Therefore, while some livestock operators, especially sheep ranchers, are making profits utilizing BLM forage it appears that the average ranch operates at a net loss. However, other factors enter into the desirability of ranching and utilizing BLM lands besides obtaining direct profits. While operating at a loss may be offset by such things as the pleasure in ranching or maintaining the ranching opportunity for future generations it is necessary to recognize the potential to reach some type of threshold of acceptable losses. In other words, operating at the current loss in net income may be justifiable; it is possible that greater losses may force many operators out of the livestock business.

Table 3-5
Ranch Budgets of Pinyon Planning Unit Cattle Operations

	Operation Type (Total Value - 1981 dollars)				
Item	Small Cattle Summer	Small Cattle FAWISP	Large Cattle Summer	Large Cattle FAWISP	Large Cattle Yearlong
Sales:					
Steer calves	$ 4,251	$ 4,149	$14,169	$20,545	$12,331
Heifer calves	1,814	2,419	4,837	7,256	10,581
Yearling steers	.....	3,441	22,356	33,268	8,603
Yearling heifers	459	946	9,457	13,240	7,566
Cull cows	1,988	3,579	15,905	23,460	14,317
Total Revenues	8,512	14,534	66,724	97,769	53,398
Variable Costs:					
BLM grazing fee	$ 368	$ 595	$ 2,365	$ 2,806	$ 4,588
Forest grazing fee	.....	.....	......	......	......
Private range lease/rent	.....	.....	3,307	5,848	......
State lease	.....	.....	......	......	......
Hay (produce)	751	440	2,907	5,253	1,127
Hay (purchase)	.....	.....	......	......	......
Protein supplement	1,750	2,508	11,738	16,913	5,773
Irrigated pasture	.....	.....	......	......	......
Salt and mineral	41	57	265	386	231
Concentrate feeds	.....	.....	......	......	......
Veterinary and medicine	72	102	469	685	409
Hired trucking	51	72	333	486	290
Marketing	26	36	166	243	145
Fuel and lubricants	687	944	3,707	5,045	3,621
Repairs	550	672	2,739	3,906	2,726
Taxes	671	997	4,044	5,514	4,016
Insurance	205	281	1,212	1,738	1,079
Interest on operating capital	287	378	1,830	2,734	1,178
General farm overhead	401	567	2,614	3,817	2,282
Other cash costs	.....	.....	......	......	......
Hired labor	389	551	2,541	3,875	2,217
Total variable costs	6,249	8,200	40,237	59,247	29,682
Other Costs:					
Family labor	778	1,102	5,082	7,420	4,427
Depreciation	1,443	1,853	6,182	8,960	6,167
Interest on investment other than land	3,409	4,677	20,381	29,728	18,302
Interest on land investment	9,767	14,867	60,539	82,227	59,952
Total other costs	15,397	22,499	92,184	128,335	88,858
Total All Costs	21,646	30,699	132,417	187,584	118,541
Net cash income	2,263	6,3334	26,487	38,522	23,716
Return above variable costs and family labor	1,485	5,232	21,405	31,102	19,279
Return to total investment	42	3,379	15,223	22,142	13,112
Return to land	-3,367	-1,298	-5,158	-7,586	-5,190

Table 3-6
Ranch Budgets of Pinyon Planning Unit Sheep Operations

	Operation Type (Total Value - 1981 dollars)	
Item	Small Sheep	Large Sheep
Sales:		
Slaughter lambs	$ 7,551	$ 55,164
Feeder lambs	5,128	37,696
Ewes	2,897	13,058
Wool	1,549	11,308
Wool incentive payment	604	4,410
Unshorn lamb payment	265	1,941
Total Revenues	17,994	123,577
Variable Costs:		
BLM permit	517	2,589
Forest permit	.....	......
State leased	.....	......
Irrigated pasture	.....	......
Private range lease/rent	586	4,155
Hay (purchase)	.....	2,046
Hay (produce)	282	......
Grain (purchase)	.....	......
Protein supplement	.....	......
Other feed	.....	......
Salt and minerals	48	1,399
Spray and dipping	4	26
Veterinary and medicine	62	449
Marketing	17	125
Trucking	407	2,048
Shearing and tagging	325	2,373
Utilities	108	787
Lamb promotion	5	37
Organizations	17	125
Legal and accounting	65	474
Wool storage	14	100
Predator control	115	165
Ram death loss	101	736
Fuel and lubricants	306	2,222
Repairs	374	2,215
Hired Labor	327	4,333
Taxes	695	4,543
Insurance	115	897
General farm overhead	203	1,486
Interest on operating capital	200	1,452
Total Variable Costs	4,870	34,774
Other Costs:		
Family labor	857	4,333
Depreciation	1,874	9,714
Interest on investment other than land	2,934	19,766
Interest on land investment	9,792	66,134
Total other costs	15,457	99,947

(continued)

Table 3-6 concluded

Item	Operation Type (Total Value - 1981 dollars) Small Sheep	 Large Sheep
Total All Costs	20,332	134,729
Net cash income	13,124	88,803
Return above variable costs and family labor	12,267	84,470
Return to total investment	10,393	74,756
Return to land investment	7,459	54,990

The Regional Economy

The main focus of the following description is the role played by agriculture, specifically the livestock industry, in the regional economy and way of life.

Communities

Very few communities are located within the boundaries of the Pinyon Planning Unit. Some of the larger communities are Enterprise, Beryl, Modena, Lund, and Milford, none of which exceeds 1,500 in population (Preliminary 1980 Census). Larger communities outside the PU, but with direct linkages to it, include Beaver, Parowan, and Cedar City. All of these communities are interdependent with the local livestock industry as indicated by the presence of financial institutions and retailers that cater to the agricultural sector. However, due to the general lack of data at the community level, especially with small communities, the major emphasis is placed on the counties of the region.

Sectors of the Economy

The Pinyon Planning Unit is located in portions of four different counties of southwestern Utah: Beaver, Iron, Millard, and Washington. Only a very small portion of the unit falls in either Washington or Millard Counties and, accordingly, no signficant impacts to the socioeconomic structure of these two counties are expected. Therefore, further analysis will consider the regional economy as only applicable to Beaver and Iron Counties.

Employment breakdowns for Beaver and Iron Counties are given in Table 3-7. These estimates were made for the year 1979 by the Bureau of Economic Analysis (U.S. Department of Commerce, 1981). The largest sectors of the Beaver County economy, based on employment, are State and local governments, farm proprietors and labor, and retail trade. The largest sectors in the Iron County economy are retail trade, State and local governments, and services. The transportation sector is also expected to be a major employer in the Beaver County economy but the actual employment figures have been withheld to avoid disclosure of confidential data.

Personal income of the two counties fell in proportions similar to employment. State and local government and retail trade both dominate the income of Beaver County, but manufacturing is not as major a contributor to the income of Beaver County as it was to employment. The construction industry ranks third in importance based upon income. The major sectors, with regard to personal income, in Iron County once again include State and local governments and retail trade but the services sector has fallen into fourth place following the transportation and public utilities industry (Fjeldsted, 1981).

Importance of the Livestock Industry. The agricultural industry does not appear to be a dominant industry, in terms of employment, in the economy of Iron County but it is an important sector of the Beaver County economy. However, the farm sector of both Iron and Beaver Counties has shown a significant decline in income and employment over recent years (U.S. Department of Commerce, 1981 and Fjeldsted, 1981). Farm labor employment in Beaver County showed a 37-percent decline between 1978 and 1979. While much of this decline

Table 3-7

Employment and Income by Broad Source in Beaver and Iron Counties, Utah; 1979

	Beaver County		Iron County	
Place of Employment	Employment (Persons)	Personal Income (Thousand Dollars)	Employment (Persons)	Personal Income (Thousand Dollars)
Total	1,614	16,455	6,792	70,857
Proprietors	388	3,911	959	7,723
Farm Proprietors	197	550	357	271
Non-farm Proprietors	191	8,361	602	7,452
Total Wage and Salary	1,226	11,696	5,833	57,607
Farm	89	1,084	199	1,417
Non-farm	1,137	15,371	5,634	69,440
Private	764	12,001	4,052	51,821
Ag. Serv., For., Fish., and Other	(L)	(L)	29	238
Mining	40	1,142	266	6,176
Construction	64	1,895	377	6,323
Manufacturing	68	654	493	5,285
Non-durable Goods	53	422	242	2,413
Durable Goods	15	232	251	2,872
Transportation and Public Utilities	(D)	(D)	400	8,643
Wholesale Trade	16	195	172	1,963
Retail Trade	257	2,556	1,373	11,530
Finance, Insurance, and Real Estate	30	562	291	3,352
Services	(D)	(D)	651	8,302
Government and Government Enterprises	373	3,370	1,582	17,619
Federal, Civilian	53	709	305	5,074
Federal, Military	31	77	120	332
State and Local	289	2,584	1,157	12,213

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System, April 1981.

(D) Not shown to avoid disclosure of confidential data.
(L) less than 10 wage and salary jobs.

could be a result of poor market conditions or a low production year it appears that there has been a general trend of decline in the farm sector.

The agricultural sector is not of sufficient size to have major influences on county-wide economies of the region. However, the agricultural community may have a stabilizing effect on both the local economies and way of life. The apparent importance placed upon passing the ranch on to one's heirs helps to maintain the rural, western lifestyle by reinforcing the associated values placed upon such a way of life and deterring the entry and rapid development of industries which fall contrary to this lifestyle.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

The analyses in this chapter address the potential impacts or environmental consequences of implementing the management actions of each of five alternative rangeland management options. The objective in analysis of this sort is to portray the most probable outcome of each of the five alternatives through the application of existing research, public input, personal knowledge of the area involved, and professional judgment. The five alternatives - Continuation of Present Management, Planning Recommendations, Livestock Grazing Preference, Resident Resource Values, and Livestock Maximization - represent differing views of balancing the resource capabilities within the Pinyon Planning Unit among various demands and needs. The two major uses of these analyses are to provide interested parties with objective information on a broad spectrum of possible management actions so that informed public input into the planning and decision-making process can be obtained and to provide the decision maker with information on the likely outcomes and trade-offs between the alternative management options that are open to him.

The material within this chapter is organized primarily by alternative. An introduction to the major management actions (change agents) common to most alternatives precedes the alternatives so the reader can have an understanding of how the change agents operate. Each alternative is arranged so the objectives of the alternative are presented first to provide the reader with the rationale for why that alternative is structured the way it is and what that structure seeks to accomplish on the ground. Next is an overview of the major management actions or change agents which would have to be employed in order to accomplish the expressed objectives. The environmental consequences or impacts of implementing the change agents are then assessed by individual resource or area of concern - vegetation, wildlife, wild horses, and socioeconomics. At the end of each alternative there is a summary which draws together the major activities and impacts into a summary table. At the end of the chapter there is a comparative summary table by which the reader can assess the differences between all alternatives at a glance.

Assumptions for Analysis

In order to provide consistent analyses, it has been necessary to make a number of basic assumptions. Primary among these are:

Timeliness

It is assumed that each alternative is fully capable of being implemented within a forseeable time frame, essentially 20 years.

Survey

It is assumed that the survey is correct and will be borne out through monitoring studies.

Grazing Capacity Adjustments

It is assumed that reductions in grazing capacities on some allotments would have to be put into effect to avoid overutilization of the forage resource. The amount of reduction would be indicated by the difference between existing average licensed use levels and the surveyed capacity levels.

Developments

It is assumed that all developments (treatments, facilities, and grazing systems) must be addressed as a whole and cannot be broken apart. That is, the assumption is that a seeding would be successful only if its attendant fences, waters, and systems of use are also implemented.

Implementation Schedule

It is assumed that there are three separate time references in the implementation of the alternatives. First is the current situation which is represented by either an average of up to the last 10 years' use for livestock or an estimate of current numbers for wildlife and wild horses. Second is the short term which is at the end of the initial adjustment period up through years 8 to 10 when livestock grazing levels have been adjusted to surveyed or monitored capacity. Third is the long term (through the end of year 20) when it is assumed that all management and development activities will have been accomplished and have yielded their full effects.

Mitigation

Standard design features and mitigation measures have been incorporated into each alternative. In instances where additional measures are necessary, details will be given as part of the management actions in each alternative. For a more complete discussion of project design features and mitigating measures see Appendix 6.

Management Actions (Change Agents)

In each of the alternatives there are as many as five categories of management actions or change agents which could effect significant changes in the resource base in the Pinyon Planning Unit: (1) adjustments in stocking (both levels of use and season of use), (2) vegetation treatments, (3) facilities, (4) grazing systems, and (5) monitoring/management revision.

Adjustments in Stocking - Levels of Use

There are two main ways of adjusting the grazing use on an area, adjusting the numbers of grazing animals and/or their season of use. Levels of stocking are adjusted by making changes in the numbers of animals allowed on a given area. This action is usually applied only to domestic livestock because their numbers are easily controlled although it can be applied to wild horses through partial herd removals.

The other method of adjusting stocking is through control of the season and length of use. Again this technique is predominantely applied to domestic livestock through the permitting process and is designed to control the time of the year and the duration that grazing occurs on a given area. Controlling both the level of stocking and the season of use is done to prevent overuse or improper use of the forage resource.

Herbage response due to the level of use appears to be significantly affected in semiarid regions. Cook (1966) found that heavy grazing persisting for several years would reduce the amount of roots and rhizomes and eventually kill the plant. Van Pollen and Lacey (1979) indicate that livestock adjustments become increasingly important as a management option in the semi-arid region. In the southwest, overgrazing by livestock has been considered to be a major factor in the destruction of wildlife habitats (Gallizioli, 1979 and Mackie, 1978). Conversely, grazing at or below carrying capacity has been demonstrated to help maintain plant communities of higher diversity (Anderson, 1969; Stoddart and Rasmussen, 1975; Cook, 1971) thereby providing higher quality wildlife habitat.

Season of Use

Research indicates that when forage plants (especially grasses and forbs) are continuously grazed during the growing season, early spring use is the most damaging (Cook, 1971). Impacts to the plant result from the interruption of the reproductive functions and normal growth of the plant. Stoddart, et.al., (1975) state "Grazing should not take place at this time so that forage plants can recover from dormancy and provide sufficient forage for the grazing animal." In contrast, late fall grazing of sagebrush ranges reduces sagebrush and increases production of grasses and forbs (Laycock, 1967). Also, the elimination or reduction of yearlong use of key forage species by herbivores would improve their vigor and production (Cook, 1966).

Vegetation Treatments

Vegetation treatments generally affect vegetation by changing the plant composition on a site from less productive sagebrush or pinyon-juniper dominance to the more productive grass dominance. Management actions alone on dominant pinyon-juniper and sagebrush communities (commonly occurring in this planning unit) generally do not result in large increases in production because livestock forage species do not successfully compete with well-established less desirable species (Sosebee, et.al., 1977; McLean and Tisdale, 1972; Texas Tech., 1976; and Holmgren and Hutchings, 1971). Treatments, on the other hand, when carefully selected and managed on suitable range sites, can provide substantial increases in production. However, treatments occurring in pinyon-juniper or sagebrush communities usually can be expected to suffer reinvasion by undesirable species. In the case of pinyon-juniper sites, redomination by undesirable species may occur within 15 years (Tausch and Tueller, 1977).

Treatments can reduce the conflicts between livestock and wildlife for key forage species (Vallentine, 1974) although the amount of benefit to wildlife is dependent upon such factors as the species of plants established after treatment, the method and design of treatment, the area treated, and post-treatment management.

Facilities

Water developments, fences, cattleguards, etc. can help improve or control the distribution and utilization of forage by grazing ungulates facilitating the implementation and operation of grazing systems to reduce overgrazing of key forage species.

Water Developments. Livestock water developments extend the usable range of an area, making more forage available because grazing in arid areas is usually concentrated around water sources. The same water sources may also benefit wildlife by permitting yearlong or seasonal use of ranges from which they have been excluded by the levels of free water (Halloran and Demming, 1958; Wright, 1959; and Dassmann, 1971). Water developments have been used extensively on rangelands occupied by both big game and livestock to obtain more uniform grazing distribution and reduce direct livestock-wildlife competition (Mackie, 1978).

Fences and Cattleguards. Fences and associated structures are necessary to control the movements of grazing animals and to limit their grazing use to prescribed areas. In the case of wild animals, such as wild horses and big game species, fences can have a negative effect by interferring locally with established migration patterns or access to habitat (Mackie, 1978; Spillett, et.al., 1967; and Buechner, 1950). Fencing also contributes significantly to death loss among game species by confinement to limited areas (Buechner, 1950) or by entanglement during crossings if not properly constructed (Papez, 1976). BLM standard operating procedures (BLM Manual 1737) provide for impacts to wildlife. This mitigation, however, would not completely eliminate fencing hazards.

Grazing Systems. Systems prescribe the grazing use of an allotment or group of allotments and establish on a recurring cycle, the number of animals (or AUMs) to be allowed, the season(s) of use, and the period(s) of rest if any. Grazing systems range in complexity from custodial which only controls the number of animals using the allotment up to multipasture rest rotation systems which control numbers, seasons, duration, etc., and which may take as long as 3 years to complete one cycle.

Periodic rest from grazing such as that offered by rest rotation and deferred grazing systems allows the forage plant to store carbohydrates, produce seed, and establish seedlings. Periodic rest of the rangeland will not, however, compensate for severe grazing during the critical periods of the life cycle of a plant (Muffler, 1975).

Although studies evaluating the effects of grazing systems on vegetation have not been conclusive in many cases, recent literature indicates that management systems in general would be expected to increase average annual herbage production on western rangeland by 13 percent (Van Pollen and Lacey, 1979). Grazing systems, both deferred and rest rotation, also tend to reduce the decline of key wildlife forage species.

Monitoring/Management Revision. Monitoring systems are the means by which the land manager can keep track of and gauge the success of management programs.

All systems involve the monitoring of actual use (livestock only), utilization of key forage species, vegetation trend, and climatic influences.

The Pinyon Management Framework Plan (MFP) outlines several stipulations for future utilization patterns. The MFP stipulations provide the following standards for future monitoring (see also Appendix 5):

(1) Up to 50-percent average utilization will be allowed on key species when an allotment is grazed continuously during the growing season prior to seed ripe.

(2) Up to 60-percent average utilization will be allowed on key species when an allotment is grazed:

   (a) After seed ripe of key species or during dormant period (winter) or

   (b) Under a deferred or rest rotation system with less than three pastures.

(3) Up to 70-percent average utilization will be allowed on key species when an allotment is grazed under a rest rotation system with three or more pastures and the systems appears to meet the physiological requirements of the key forage species.

The observation of these factors on a regular basis does not, in itself, function as a change agent unless problems are picked up. In that case, decisions would be made concerning solutions to the problems and one or a combination of the above management actions would be invoked to resolve them.

ALTERNATIVE 1 - CONTINUATION OF PRESENT MANAGEMENT (NO ACTION)

Objectives of the no action alternative would be to assess the potential long-term impacts of continuing the existing management activities on into the future. The reader should not be confused by the term "No Action". Existing management plans would be continued as would current day to day activities. This type of analysis provides the manager with information on the strengths and weaknesses of the existing management framework and the seriousness of trends in existing problems if they were to be carried unabated into the future. Therefore, no new management actions would be implemented under this alternative. Current stocking levels for livestock, wildlife, and wild horses would remain unchanged at 60,757, 2,663, and 8,345 AUMs respectively. There would be no vegetation treatments proposed, or any new facilities. Existing systems and management strategies on 26 allotments would be retained as they are, and no new systems would be proposed for the remaining 47 allotments. Likewise, the existing monitoring studies would be continued into the future, but no new or more intensive studies would be initiated.

ENVIRONMENTAL CONSEQUENCES

IMPACTS TO VEGETATION

Significant Management Actions and Change Agents

No new grazing systems, management facilities, or vegetation treatments would occur under this alternative. It is assumed for analysis purposes that wild horses would be maintained at current levels and livestock use would continue at existing averaged licensed use levels even though permittees could activate use up to their active preference level although they have not chosen to do so for the past 5 to 10 years. Forage on 31 allotments (330,567 acres) would continue to be overused by livestock and 35 allotments (534,176 acres) would continue to receive spring grazing with no rest.

There would be 26 allotments (576,933 acres) that would continue to be managed under rest rotation and deferred rotation grazing systems, and 41 allotments (893,237 acres) that would be utilized at or below the surveyed grazing capacity.

It should be reiterated that impacts to vegetation are based on the assumption that current levels of livestock use (average licensed use) would continue through the long-term period. Should permittees begin using forage at their current active preference levels, some projected positive impacts (primarily in allotments which are currently under some management system and stocked at below surveyed capacity) could be less than those presented below.

Ecological Condition

Impacts to ecological condition would be polarized in this alternative resulting in part from the overstocking and lack of grazing systems that exist on some allotments while other allotments are stocked below the surveyed grazing capacity and currently have grazing systems.

A loss of vigor and reproductive potential of important forage plants resulting from overutilization or use at critical growth stages would result in less palatable plants becoming established and reproducing. This would generally occur on the areas that would continue to receive spring grazing (31 allotments, 534,176 acres) and/or overutilization (31 allotments, 330,567 acres). This would result in a change in composiition (fewer forage plants) on those sites that currently have a significant population of desirable forage plants.

On 41 allotments (893,237 acres) livestock forage would be allocated at levels below that indicated to be available by the survey. Additionally, 26 allotments (576,933 acres) would continue to receive periodic rest during the growing season from the rest rotation and deferred rotation systems currently being practiced under existing AMPs and informal rancher/resource area agreements. The projected beneficial effects of eight stocking grazing systems, and the combination of both would result in an improvement in the vigor, reporduction, and seedling establishment of desireble forage species on 733,921 acres in 31 allotments.

Compositional changes sufficient to change ecological condition class would, however, occur only on a limited number of acres as shown in the following:

Ecological Condition	Current (Acres)	Long Term (Acres)
Climax	28,805	28,805
High	369,507	379,235
Medium	663,394	655,779
Low	187,715	185,602
Unclassified	14,829	14,829
Total	1,264,250	1,264,250

Ecological Trend

As discussed in the ecological condition section above, spring grazing on 35 allotments and use of livestock forage at levels above that indicated to be available by the recent survey on 31 allotments would tend to continue excessive pressure on desirable forage plants, resulting in continued depletion of carbohydrate reserves, and loss of plant vigor. A significant number of acres currently in a static ecological trend would lose desirable forage plants and could be expected to shift to a downward or upward ecological trend, depending on the range site.

Areas receiving periodic rest (26 allotments) and/or being grazed below surveyed capacity levels (41 allotments) would generally respond with continued improvement of desirable forage plants. This would cause, in some areas, existing vegetation composition to move toward its biological climax composition.

Expected ecological trend response for the Pinyon PU is as follows:

Ecological Trend	Current (Acres)	Long Term (Acres)
Up	129,246	146,127
Down	194,212	206,999
Static	925,381	895,713
Unclassified	15,411	15,411
Total	1,264,250	1,264,250

IMPACTS TO LIVESTOCK

Significant Management Actions and Change Agents

No new grazing systems, vegetation treatments, or management facilities would occur under this alternative. Wild horses would be maintained at current levels and livestock use would be assumed to remain at licensed use levels.

Forage on 31 allotments would continue to be overused by livestock, and 35 allotments (534,176 acres) would continue with spring grazing. Twenty-six grazing systems (576,933 acres), providing periodic rest from livestock grazing, would continue under existing AMPs and informal rancher agreements with the Beaver River Resource Area. Grazing at levels below the surveyed capacity would continue on 41 allotments (893,237 acres). It should be noted that although livestock grazing was assumed for analysis purposes to continue in the long term at average licensed use levels, permittees could still use up to their active preference levels under this alternative. If significant numbers of permittees were to increase their stocking levels up to active preference levels in the long term, impacts to forage production could be different from those presented in this alternative.

Available Livestock Forage Production

Primairly as a result of livestock grazing during the growing season and overstocking, 17 allotments would experience a loss in vigor and composition by weight of desirable forage species resulting in a loss of 538 AUMs of available livestock forage production from those allotments. An additional 23 allotments (324,226 acres) would be expected to show no increase in production in the long term.

The continued allocation of livestock forage below the surveyed carrying capacity and/or grazing systems providing periodic rest during the growing season would result in an increase of 13,131 AUMs on 30 allotments (788,921 acres) in the long term because of improvement in desirable forage species.

The available livestock forage production in the Pinyon PU under this alternative would be as shown in Table 4-1:

Table 4-1

Livestock Forage Production - Alternative 1

	Survey (AUMs)	Short Term (AUMs)	Long Term (AUMs)
Single Use Livestock Forage (Competitive and Noncompetitive)	79,319	79,319	79,319
Competitive Wild Horse Forage	-2,916	-2,916	-2,916
Competitive Wildlife Forage	-413	-413	-413
Available Livestock Forage	75,990	75,990	75,990
Management	......	......	12,593
Treatment	......	......	......
Total Available Livestock Forage	......	......	88,583

Livestock forage allocations for the Pinyon PU are summarized as follows:

	Active Preference	Total Preference	Average Actual Use	Surveyed Production	Short-Term Production	Short-Term Allocation	Long-Term Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	[a]75,990	75,990	[b]60,757	88,583	60,757[b]

[a] This number is constrained by wildlife and wild horse forage needs.

[b] It is assumed that livestock forage could continue to be allocated at the current average licensed use level. Permittees could activate grazing use up to the active preference level.

IMPACTS TO WILDLIFE HABITAT

Significant Management Actions and Change Agents

Under this alternative, no adjustments in current management are proposed. As a result, all forage allocations, livestock numbers, treatments and facilities would be maintained with no official forage allocations for wildlife, treatments, or facilities being proposed. Wild horse numbers would be maintained at 552, their current population levels. The analysis of how the continuation of current management actions will affect wildlife habitat is discussed below.

Wildlife Habitat Condition

Mule Deer

Overutilization of forage by livestock and wild horses would result in declines in the diversity of forbs and succulent plants and the production of key forage species (i.e., bitterbrush) and would result in deterioration of habitat quality on 6,262 acres of summer range, 20,495 acres of winter range and 16,859 acres of yearlong mule deer habitat. Expected long-term changes in mule deer habitat are shown in Table 4-2.

Table 4-2
Mule Deer Habitat Condition - Alternative 1

	Habitat Condition	Current Acres	Long-Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	25,295	21,644	3,651
	Fair	24,703	22,092	2,611
	Poor	17,196	23,458	.....
		67,194	67,194	6,262
Winter	Good	59,444	57,460	1,984
	Fair	236,977	218,466	18,511
	Poor	216,203	236,698	......
		512,624	512,624	20,495

(continued)

Table 4-2 concluded

	Habitat Condition	Current Acres	Long-Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	32,705	22,156	10,549
	Fair	85,175	89,414	6,310
	Poor	131,743	138,053	......
		249,623	249,623	16,859

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[a] Habitat condition information was collected during the 1979-90 SVIM inventory (see Chapter 3, Wildlife).

The overutilization of forage by livestock is causing a decline in key forage species on 28 allotments used by mule deer and is allowing undesirable species to invade, thereby reducing the quality of habitat. Yearlong use by wild horses also reduces the diversity of plants and contributes to the decline in habitat quality. Wild horse and livestock use of 39 wildlife special use areas (primarily seeps, springs, and small aspen groves) and 117 acres of riparian habitat would continue, resulting in these areas remaining in poor to fair condition. This impact would be most significant in mule deer summer range.

Antelope

Continued decline of black sagebrush, bud sagebrush, and fourwing saltbush from overgrazing would result in a decline on 41,000 acres of yearlong antelope habitat. Changes in antelope habitat would occur as follows:

	Habitat Condition	Current Acres	Long-Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	70,637	59,482	11,155
	Fair	252,796	222,951	29,845
	Poor	300,024	341,024	......
		623,457	623,457	41,000

[a] Habitat condition information was collected during the 1979-90 SVIM inventory (see Chapter 3, Wildlife).

Black sagebrush, bud sagebrush, and fourwing saltbush are the most important forage species for antelope in the planning unit. Over-utilization of these species by sheep and the reduction of plant diversity on 20 allotments due to overgrazing by livestock has and would continue to result in the overall loss of habitat quality for antelope.

Elk

Continuing current livestock stocking levels and maintaining wild horse herds at current levels, are management actions which would result in declines in the quality of 1,362 acres of summer, 656 acres of winter and 8,902 acres of yearlong elk habitat. Long term changes in elk habitat would occur as shown in Table 4-3.

Table 4-3

Elk Habitat Condition - Alternative 1

	Habitat Condition	Current Acres	Long-Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	1,636	787	651
	Fair	6,242	6,380	711
	Poor	5,753	6,464	...
		13,631	13,631	1,362
Winter	Good	1,663	1,663	...
	Fair	5,597	4,941	656
	Poor	16,844	17,500	...
		24,104	24,104	656
Yearlong	Good	9,379	2,456	6,923
	Fair	9,440	14,384	1,979
	Poor	11,838	13,817	.....
		30,657	30,657	8,902

[a] Habitat condition information was collected during the 1979-90 SVIM inventory (see Chapter 3, Wildlife).

Four wildlife special use areas and 89 acres of riparian habitat on elk range would remain in poor to fair condition due to continued use by livestock and wild horses.

Deterioration in elk habitat would result primarily from overutilization by livestock on three allotments and competition with wild horses for key plants used by all species. Elk, cattle, and wild horses are primarily grazers, therefore, heavy use by cattle or horses would result in a direct loss of forage available to elk and over the long term result in habitat deterioration.

Sage Grouse

No significant impacts to sage grouse would be anticipated.

Threatened and Endangered Species

No impacts to the bald eagle, peregrine falcon, or the Utah prairie dog would be anticipated.

Summary

Because of the overutilization of forage by both livestock and wild horses, declines in the quality of big game habitat would continue to occur. Habitat deterioration would occur on 43,616 acres of mule deer habitat, 41,000 acres of antelope habitat, and 10,920 acres of elk habitat. No official allocation of forage would be made to big game.

IMPACTS TO WILD HORSES

Significant Management Actions

Maintaining livestock and wild horses at current levels are specific actions which would affect wild horses and their range. No unit-wide forage allocation specifically to wild horses would occur. Wild horse numbers by herd would be as follows:

Herd Unit	Current Levels
Bible Spring	47
Blawn Wash	82
Chokecherry	25
Four Mile Wash	49
Frisco	68
Mt. Elinor	37
North Hills	62
Sulphur	135
Tilly Creek	47
Total	552

Impacts

Continuation of present livestock grazing management as proposed would have a negative impact on wild horses. Competition for forage by livestock and wild horses would create a shortage of available forage for wild horses and would result in continued overutilization of the forage resource on 284,151 acres of wild horse range in 19 allotments. This impact would occur primarily in the Mt. Elinor, North Hills, Bible Spring, and Tilly Creek herd units. Heavy utilization and trampling of vegetation surrounding 31 water sources (primarily seeps, springs, and riparian areas) would continue to result in deteriorated water quality and poor vegetation condition surrounding these areas. In order to maintain wild horse numbers at the current estimated 552, it would be necessary to remove an estimated 83 animals unit-wide annually over the long term.

Summary

Because of the overutilization of forage by both livestock and wild horses, wild horse range deterioration would occur.

IMPACTS TO SOCIOECONOMICS

Significant Management Actions and Change Agents

The most significant management action affecting socioeconomics under this alternative would be the continuation of livestock forage allocations at present levels. No new grazing systems, management facilities, or vegetation treatments are proposed under this alterantive. Wild horses would be maintained at present levels.

Impacts to Ranching Operations

The following analysis is based upon figures presented in Table 4-19 Alternative 1 found at the end of this chapter.

Herd size, net cash income, variable costs, and hired farm labor hours would remain at present levels under this alternative in the absence of any changes in forage allocation. Average herd size would range from 29 cows for small cattle summer operations to 276 cows for large cattle fall-winter-spring operations and from 171 ewes for small sheep operations to 1,249 ewes for large sheep operations.

In the absence of any changes in herd size, net cash income (the difference between gross revenues and variable cost) would remain stable for all operation types. Net cash income would range, in 1981 dollars, from $2,263 for small cattle summer operations to $88,803 for large sheep operations. Variable costs would also continue at present levels with the greatest variable expenditures being made by large cattle fall-winter-spring operations. An average of 748 hours of hired farm labor for all operation types would continue to be required under this alternative.

Impacts to the Region and its Communities

This alternative would result in no change in direct regional agriculturally-related expenditures beyond the present level of $994,306 annually. Currently direct agricultural expenditures made by Pinyon livestock operators account for only 0.7 percent of the combined gross taxable sales of the primary impact region, Beaver and Iron Counties (gross taxable sales are projected from the first three quarters of 1981; Five County Association of Governments, 1982).

Livestock operations currently require approximately 748 hours of hired farm labor when averaged for all operation types. Approximately 22 full-time farm labor jobs are provided by ranching on the planning unit.

Summary

This alternative does not propose any changes in livestock forage allocations and would, therefore, not result in any socioeconomic impact on either existing ranching operations or the current regional economy.

UNAVOIDABLE ADVERSE IMPACTS

Adverse impacts to the vegetation, wildlife habitat and wild horse range would result due to the overallocation of forage to livestock on 30 allotments if this alternative were implemented.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The overallocation of forage to livestock on some allotments would result in a loss of 538 AUMs of forage to livestock and a gradual deterioration in the forage resource and declines in the quality of wildlife habitat and wild horse range.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

No significant irreversible commitment of resources has been identified. Irretrievable commitments of resources would occur in the form of deteriorated wildlife habitat and wild horse range.

SUMMARY

Significant changes to the vegetation would occur on 23 allotments with stocking rates below the survey capacity. The number of acres in upward and downward trend would increase with areas in static ecological trend decreasing. The number of acres in high ecological condition would increase while all other classes except the climax class would show a decrease in acres. Forage production would increase from 75,990 AUMs to 88,583 AUMs. Wildlife habitat quality would deteriorate on 43,616 acres of mule deer habitat, 41,000 acres of antelope habitat, and 10,920 acres of elk habitat. As overutilization of forage on some allotments continued, a deterioration in wild horse range would result. No impacts to existing ranching operation or the regional economy would occur.

ALTERNATIVE 2 - PLANNING RECOMMENDATIONS

OBJECTIVES OF THE ALTERNATIVE

The overall objective of the management actions proposed under this alternative would be to provide a balanced multiple resource management program. Within this context are the management targets of (1) the prioritization of implementing intensive rangeland management activities and the categorization of allotments by such priorities; (2) the resolution of forage allocation conflicts between livestock, wildlife and wild horses; (3) the stabilization of wild horse numbers and their ranges; (4) the establishment and maintenance of long term and prior stable numbers of wildlife; (5) the improvement of the vegetation resource through the development of grazing systems and adjustment of seasons of use; and (6) the stabilization of the livestock industry.

Prioritizing rangeland investment would effect all 73 allotments either by allowing investment in the intensive management (I category) allotments, or foregoing for the time being any immediate opportunity for investment in the lower priority allotments - those allotments currently with adequate management (M category allotments) and those under custodial management (C category allotments). Prioritization of allotments for implementing intensive management is based generally on five criteria: present rangeland condition, adequacy of current management practices, the potential for increasing production through improved management, the existence of land use or resource conflicts, and the potential for positive economic return. More intensive management including treatments and facilities would be proposed only on those allotments where range condition is fair to poor, where management practices are presently inadequate, but where there exists a potential for increasing production through improved management, where there exist land use or resource conflicts, and where there is a potential for positive economic return if investments are made in treatments and facilities. All other allotments would fall into one of two lower priority categories and no rangeland improvements or changes in present management would be proposed for them.

Stocking levels for livestock, wildlife, and wild horses would be adjusted from 60,757, 2,663, and 8,345 AUMs respectively to 63,820, 2,663, and 3,225 respectively in the short term and 88,103, 5,407, and 3,225 AUMs over the long term. There would be a total of 99,616 acres of vegetation treatment. Of these 84,515 acres would be in I allotments for livestock and would yield an estimated 16,903 AUMs of livestock forage. The remaining 15,101 acres of treatment would be for wildlife habitat quality improvement and would not be confined to I allotments. Associated with these treatments and systems being proposed would be 20 spring developments, 3 wells, 5 reservoirs or catchments, 65 water troughs, 131 miles of pipeline, and 152 miles of fencing. New grazing systems would be proposed on 21 allotments. Rest rotation systems would be proposed on 15 allotments covering nearly 350,000 acres, deferred rotation would be proposed on 245,000 acres in 11 allotments, and continuous seasonal would be applied to nearly 42,000 acres in five allotments. Two allotments with 48,430 acres would remain unallotted. Intensive monitoring would be applied to the 32 allotments in the I category. A lower intensity monitoring would be applied to all other allotments. Also, seven full allotments and portions of three others would be proposed for disposal by sale or exchange.

ENVIRONMENTAL CONSEQUENCES

IMPACTS TO VEGETATION

Significant Management Actions and Change Agents

New grazing systems on 21 allotments providing periodic seasonal rest, and 99,616 acres of vegetation treatments would be implemented under this alternative. There would be 26 allotments (576,933 acres) that would continue to be managed under rest rotation and deferred rotation grazing systems. For analysis purposes it was assumed that the 31 I category allotments would be stocked at the surveyed capacity while M and C category allotments would continue to be grazed at current average licensed use levels. Permittees could increase stocking levels 30 percent up to the surveyed capacity. If significant numbers of operators elected to do this, overall impacts would differ from those discussed below for M and C category allotments.

Less significant management actions occurring in the alternative would be reducing wild horses from 522 to 215 animals and constructing water developments, fences, and other range developments to improve livestock distribution.

Ecological Condition

Implementing grazing systems that provide periodic rest from livestock grazing during the growing season on 18 allotments (430,074 acres) that currently receive yearly spring use would allow established desirable forage plants to improve in vigor and numbers. Sites receiving vegetation treatments would be expected to experience a dramatic shift in vegetation composition. However, this shift in composition would be expected to equate to a shift in ecological condition, only on those sites that are not currently in a medium ecological condition class (seral stage). The ecological condition(s) in any individual allotments would be taken into account as one of the several factors influencing the final decisions for appropriate management actions to be prescribed by the Allotment Management Plan (AMP) for that allotment.

Desirable forage species would continue to be lost from areas that continue to be grazed at levels above that suggested by the survey (9 allotments, 22,191 acres), and from sites that would continue to receive yearly spring grazing by livestock (17 allotments, 104,102 acres).

The greatest changes in ecological condition would occur in the I category allotments under this alternative. This would occur because the majority of change agents occur in allotments in this management category. Changes in ecological condition for all three allotment categories would be as shown in Table 4-4.

Table 4-4
Ecological Condition - Alternative 2

Ecological Condition	Current (Acres)	Long Term (Acres)
I Management Allotments		
Climax	16,333	15,933
High	211,998	196,330
Medium	361,047	403,225
Low	83,478	57,368
Unclassified	4,139	4,139
M Management Allotments		
Climax	10,517	10,517
High	153,253	159,360
Medium	271,411	272,755
Low	83,335	75,884
Unclassified	10,516	10,516
C Management Allotments		
Climax	1,955	1,955
High	4,256	4,256
Medium	30,936	30,052
Low	20,902	21,786
Unclassified	174	174
Total		
Climax	28,805	28,405
High	369,507	359,946
Medium	663,394	706,032
Low	187,715	155,038
Unclassified	14,829	14,829
	1,264,250	1,264,250

Ecological Trend

An improvement in vigor and seedling establishment of desirable forage plants would be expected to result from the implementation of grazing systems on 18 allotments (430,074 acres) under this alternative. As identified in the Chapter 3 discussion of Ecological Trend, this upward shift in trend of forage species would not necessarily result in an upward shift in ecological trend except on those sites that would be expected to have large populations of existing forage species present on the site in a climax ecological condition.

Vegetation treatments on 99,616 acres would, in most cases, replace existing vegetation with more desirable forage species; changes in ecological trend would, however, be expected only on those sites not currently listed in a static trend.

Vigor of forage plants on those sites that would continue to be overutilized by livestock (9 allotments, 22,191 acres) and grazed during the spring growing seasons (17 allotments, 104,102 acres) would be expected to decline, leading to a downward trend on some sites that contain significant populations of forage plants in a climax ecological condition. Changes in ecological trend would also be expected on selected allotments currently under a grazing system (primarly M category allotments) that would continue to be grazed at levels below the surveyed capacity. Ecological trend by category would be as shown in Table 4-5.

Table 4-5

Ecological Trend - Alternative 2

Ecological Trend I Category	Current (Acres)	Long Term (Acres)
Up	49,022	92,732
Down	108,063	68,492
Static	514,545	510,406
Unclassified	5,365	5,365
M Category		
Up	79,098	58,712
Down	73,061	81,712
Static	367,148	378,883
Unclassified	9,725	9,725
C Category		
Up	1,126	4,912
Down	13,088	14,798
Static	43,688	38,192
Unclassified	321	321
Total		
Up	129,246	156,356
Down	194,212	165,002
Static	925,381	927,481
Unclassified	15,411	15,411
	1,264,250	1,264,250

Summary

The greatest impact to ecological condition and trend would occur on those areas which would either receive vegetation treatments, or would be managed under a deferred or rest rotation grazing system. This would generally be in I and M category allotments.

IMPACTS TO LIVESTOCK

Significant Management Actions and Change Agents

On 21 allotments, grazing systems would be implemented to provide rest to forage plants during the growing season. Vegetation treatments would be conducted on 99,616 acres of native range and numerous water developments, fences, and other range developments would be constructed. Wild horse numbers would be reduced from 522 to 215 head.

It was assumed for analysis purposes that the 32 I category allotments would be stocked at the surveyed capacity and the M and C category allotments would be stocked at the average licensed use level of the last 5 to 10 years. If permittees choose to run livestock at levels other than those asumed in this alternative, impacts could be expected to be different from those presented in this alternative. This would be particularly true of those allotments that are currently under a grazing system.

Available Livestock Forage Production

Reducing grazing on 19 allotments (261,587 acres) to capacity and a reduction in competition for forage resulting from the removal of 337 horses would increase available livestock forage from 75,990 AUMs to 77,990 AUMs in the short term.

In the long term, a significant increase in available livestock forage production (16,903 AUMs) would accrue as a result of the 99,616 acres of vegetation treatments. Implementation of new grazing systems on 21 allotments, 18 of which are currently grazed yearly during the critical spring growing season, along with continued improvmenent of allotments currently managed under a rest rotation or deferred rotation system would allow an additional total 26,055 AUMs to be produced due to natural improvement of existing vegetation. A loss of 64 of these AUMs would be expected from 6 allotments that would continue to be grazed in the spring at levels above those identified as proper by the survey. Available livestock forage production in the Pinyon PU under this alternative would be as shown in Table 4-6:

Table 4-6
Livestock Forage Production - Alternative 2

I Category Allotments	Survey (AUMs)	Short Term (AUMs)	Long Term (AUMs)
Single Use Livestock Forage (Competitive and Noncompetitive)	33,817	33,817	33,817
Competitive Wild Horse Forage Forage	-2,017	-643	-643
Competitive Wildlife Forage Available	-174	-174	-354
Available Livestock Forage	31,626	33,000	32,820
Management			7,380
Treatment			16,903
Total Available Livestock Forage			57,103

(continued)

Table 4-6 concluded

M Category Allotments	Survey (AUMs)	Short Term (AUMs)	Long Term (AUMs)
Single Use Livestock Forage (Competitive and Noncompetitive)	43,118	43,118	43,118
Competitive Wild Horse Forage	-765	-247	-247
Competitive Wildlife Forage Available	-219	-219	-475
Livestock Forage	42,134	42,652	42,396
Management			11,305
Treatment			......
Total Available Livestock Forage			53,701

C Category Allotments	Survey (AUMs)	Short Term (AUMs)	Long Term (AUMs)
Single Use Livestock Forage (Competitive and Noncompetitive)	2,384	2,384	2,384
Competitive Wild Horse Forage	-134	-26	-26
Competitive Wildlife Forage Available	-20	-20	-24
Livestock Forage	2,230	2,338	2,334
Management			-37
Treatment			.....
Total Available Livestock Forage			2,301

Total	Survey (AUMs)	Short Term (AUMs)	Long Term (AUMs)
Single Use Livestock Forage (Competitive and Noncompetitive	79,319	79,319	79,319
Competitive Wild Horse Forage	-2,916	-916	-916
Competitive Wildlife Forage Available	-413	-413	-853
Available Livestock Forage	75,990	77,990	77,550
Management			18,648
Treatment			16,903
Total Available Livestock Forage			113,105

Livestock forage allocations for the Pinyon PU under this alternative are summarized as follows:

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-[a] Term Production	Short-Term Allocation	Long-[a] Term Production	Long-Term Allocation
I Management Categories	44,600	55,232	29,757	31,626	32,820	32,820	57,103	[b]57,103
M Management Categories	37,592	46,225	28,581	42,134	42,652	[c]28,518	53,701	[c]28,581
C Management Categories	3,929	3,976	2,419	2,230	2,338	[c] 2,419	2,301	[c] 2,419
Total	86,121	105,433	60,757	75,990	77,810	63,820	113,105	88,103

[a] Constrained by wildlife and wild horse forage needs.

[b] It is assumed that livestock forage would be allocated at the surveyed capacity.

[c] It is assumed that livestock forage would continue to be allocated at the current average licensed use level. Permittees could activate grazing use up to the active preference level.

Summary

Available livestock forage production would increase significantly under this alternative, mainly as a result of vegetation treatments and the existing and proposed grazing systems providing rest to vegetation during critical growth periods.

IMPACTS TO WILDLIFE HABITAT

Significant Management Actions and Change Agents

Changing the numbers of livestock, reducing the utilization of vegetation, implementing grazing systems, developing range projects (especially 152 miles of livestock management fences), treating 15,101 acres for wildlife habitat improvement, and reducing wild horse numbers, are specific actions that would cause direct changes to the vegetation. These changes would affect the wildlife habitat by increasing the diversity, amount, and availability of food, cover and water. Sufficient forage to support 1,286 mule deer, 600 antelope, and 54 elk would be allocated for current big game demands (mule deer 1,591 AUMs, antelope 755 AUMs, and elk 317 AUMs) in the short term. In the long term as big game numbers increase up to as much as 2,482 mule deer, 1,070 antelope, and 178 elk and forage becomes available, allocations for long-term goals (UDWR) or prior stable demands would be met (mule deer 3,041 AUMs, antelope

1,313 AUMs, and elk 1,053 AUMs). The analysis of these changes in vegetation management and how it will affect wildlife habitat is discussed below.

Wildlife Habitat Condition

Mule Deer

Establishing grazing systems, reducing livestock and wild horse numbers, developing livestock vegetation treatments, and treating 4,552 acres specifically for mule deer would improve mule deer habitat. Improvements in plant vigor, increased vegetation diversity, and increased forage production would result in improvements in the quality of 8,008 acres of summer range, 59,000 acres of winter range, and 21,696 acres of yearlong mule deer habitat. Long-term improvements in mule deer habitat would occur as shown in Table 4-7.

Table 4-7

Mule Deer Habitat Condition - Alternative 2

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	25,295	26,766	.....
	Fair	24,703	31,240	1,471
	Poor	17,196	9,188	6,537
		67,194	67,194	8,008
Winter	Good	59,444	69,365	......
	Fair	236,977	286,056	9,921
	Poor	216,203	157,203	49,079
		512,624	512,624	59,000
Yearlong	Good	32,705	45,070	......
	Fair	85,175	94,506	12,365
	Poor	131,743	110,047	9,331
		249,623	249,623	21,696

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

The reduction of livestock stocking levels to the survey capacity would stop the overutilization of forage on 18 allotments used by mule deer. However, ten allotments would continue to be overallocated, allowing undesirable species to invade, reducing the quality of habitat.

The reduction in number of wild horses would eliminate wild horse use on 15 of the 39 special wildlife use areas (seeps, springs, aspen groves, etc.). Continued heavy use by livestock, and in some cases wild horses, would occur on all 117 acres of riparian habitat (URA 3, Wildlife). The installation of approximately 155 miles of fence in mule deer habitat required for livestock management would cause some disruption of deer movements and some loss of deer would occur due to entanglement. Seventy livestock water developments would benefit mule deer by providing additional water and encourage better distribution.

Forage allocations to mule deer would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
1,286	1,591	1,286	1,591	2,482	3,041

[a] Allocations of forage based on management goals and increases in the amounts of forage allocated would occur as needs arise.

Antelope

The implementation of grazing systems and the associated changes in stocking levels, season of use, and development and treatments on 75,556 acres of antelope habitat of which 10,549 acres would be treated specifically for antelope would cause changes in plant diversity and stabilize production of key forage plants, and would result in improvements on 34,399 acres of antelope habitat. The changes in antelope habitat would be as follows:

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	70,637	93,110	......
	Fair	252,796	240,870	22,473
	Poor	300,024	289,477	11,926
		623,457	623,457	34,399

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[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

The construction of 107 miles of fence in areas used by antelope would have an adverse impact on antelope movements and cause problems similar to those mentioned above for mule deer (Spillett et.al., 1967).

The reduction of livestock stocking levels to the survey capacity would stop the overutilization of forage on 14 allotments used by antelope. This would particularly benefit forage plants such as black sagebrush, bud sagebrush, and fourwing saltbush. However, 6 allotments would continue to be overallocated, allowing undesirable species to invade, reducing the quality of habitat.

Sixty-one water developments would provide additional water, encourage better distribution, and improve the quality of antelope habitat (URA 3, Wildlife).

Forage allocations to antelope would occur as follows:

Herd Unit	Current Levels	Proposed Numbers to be Removed	Proposed Levels
Bible Spring	47	47	0
Blawn Wash	82	52	30
Chokecherry	25	0	25
Four Mile Wash	49	49	0
Frisco	68	48	20
Mt. Elinor	37	37	0
North Hills	62	27	35
Sulphur	135	30	105
Tilly Creek	47	47	0
Total	552	337	215

Impacts

The most significant impacts to wild horses would be the proposed reduction of horse numbers to 215 (the loss of 337 animals) and the loss of approximately 282,212 acres or 27 percent of their present range. The major loss of range would occur primarily in areas where wild horses have expanded their range since 1971 and where the establishment of grazing systems and associated treatments, developments, and facilities would inhibit their natural wild free-roaming nature.

Herds reduced to 20 animals or less would require intensive management in order to retain herd viability and prevent inbreeding and the eventual loss of the herd.

The reduction of livestock and wild horse numbers would reduce the pressure on plants currently used by both cattle and wild horses. Overallocation of forage would continue on only one allotment (6,725 acres) in which no adjustments in livestock stocking levels would occur. As a result, the quality of forage for remaining horses would be improved and their competition with cattle reduced.

Heavy utilization and trampling of vegetation surrounding four water sources (seeps, springs, and riparian areas) would continue resulting in deteriorated water quality and poor vegetation condition surrounding these areas.

Forage allocations to wild horses would occur as follows:

Current Needs		Short Term[a]		Long Term	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
552	8,345	215	3,225	215	3,225

[a] Allocations of forage based on management goals and increases in the amounts of forage allocated would occur as needs arise.

Vegetation treatments would, in the long term, provide forage of higher quality. However, to ensure that treatments become established, protection from grazing animals would be required. Fencing of such areas plus fences for livestock management purposes would restrict the natural free-roaming nature and movements of wild horses.

The construction of 35 water developments would be beneficial to wild horses by allowing them to use areas which do not currently have water thereby improving their distribution across existing range.

Summary

The reduction of wild horses to 215 head would be a negative impact to wild horses and result in a loss of 337 head. Some quality improvements to wild horse range would occur over the long term due to reduced grazing levels, livestock grazing management practices, and improved water availability.

IMPACTS TO SOCIOECONOMICS

Significant Management Actions and Change Agents

Adjustment of livestock forage allocations to surveyed production on 32 allotments, implementing new grazing systems on 21 allotments, and performing vegetation treatments on 98,272 acres would be the most significant management actions affecting socioeconomics in this alternative. Less significant management actions include reducing wild horses from 552 to 215 animals and constructing water developments and fences to improve livestock distribution. Seven entire allotments and portions of three others would be removed from public land status and Federal grazing administration through various community expansion, exchange, and land disposal programs. This would result in a loss of 450 AUMs. The combined long-term effect of these actions is an overall 56 percent increase in forage available to livestock.

Impacts to Ranching Operations

The following analysis is based upon figures presented in Table 4-19 Alternative 2 found at the end of this chapter.

In the short term, four operation types would increase herd size in response to increased forage allocations, while two types would decrease herd size as a result of decreased forage allocations, and one type would remain at the current average herd size. The greatest increase in herd size, in the short term, would be in small sheep operations which would increase from an average of 171 to 205 ewes. The greatest percentage decrease in herd size, in the short term, would occur in small cattle summer operations. All operation types, except for small cattle fall-winter-spring operations, would increase herd size in the long term with the greatest percentage change (146 percent) occurring in small sheep operations.

Net cash income would increase an average of 2 percent for all livestock operators in the short term. In the long term, small cattle fall-winter-spring operators would not experience a change in net cash income but, overall, Pinyon PU operation types would experience a 47-percent increase in net cash income. Variable costs would increase in response to increased herd size. The required long-term increase in these expenditures would range from no increase for small cattle fall-winter-spring operations to $28,349 per year for large sheep operations. Increased operation size would lead to an average additional per ranch hired farm labor requirement of 45 hours in the short term and 302 hours in the long term.

A total of six operations would be affected by season of use adjustments (other than rotational systems). Of these operations, three are large cattle summer operations, two are small cattle summer operations, and one is a large cattle yearlong operation. The adjustments in season of use for all three affected allotments involve postponing late spring grazing so that no grazing occurs before June 15. The effect of this postponement is that livestock operators must provide an alternative feed source during the period (generally 1 month) they can no longer utilize public lands. The monetary impact of this postponement is not quantifiable due to the lack of data concerning alternative feed sources but it is expected that the loss of one month's feed could be handled through longer use of base property or by feeding either purchased or produced hay without severely impacting the ranch operation.

Impacts to the Region and its Communities

This alternative would result in a regional increase in direct agriculturally related expenditures of $108,341 in the short term and $599,862 in the long term. Increased expenditures in the agricultural sector would strengthen agricultural support industries within and adjacent to the planning unit. The effect of these increases in ranching expenditures on the region-wide economy would be slight, representing only 0.1 percent of gross taxable sales of Beaver and Iron Counties combined, in the short term, and 0.4 percent in the long term. This is based on the assumption of no increase in gross taxable sales over the 20-year planning horizon (gross taxable sales are projected from the first three quarters of 1981; Five County Association of Governments, 1982).

The general increase in the sizes of ranching operations under this alternative would require additional hired farm labor. Approximately one full-time job would be created in the short term and nine hired farm labor jobs in the long term.

Summary

Only minor socioeconomic impacts would result under this alternative. Most of these impacts would be in the form of positive benefits to both ranchers and agricultural support industries. Individual ranch operations would see significant increases in net cash income in the short term, averaging only 2 percent for all Pinyon ranchers, but would see a 47percent increase in the long term. The effect of these increases would be a general increase in the stability of ranching operations and a slight strengthening of agricultural support industries. The overall impact to the regional economy would be very slight.

UNAVOIDABLE ADVERSE IMPACTS

Utilization above the physiological limits on 12 allotments would have an adverse impact on the vigor and ecological trend of vegetation. Range developments would result in 407 acres of vegetation disturbed in the short term with only 7 acres remaining disturbed in the long term. Vegetation treatments on 99,616 acres would adversely impact current vegetation. Adverse impacts to wildlife would result from the construction of 155 miles of fence and increased death loss of big game would occur due to entanglement. The loss of 337 wild horses from the PU would be an adverse impact to wild horses.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Available livestock forage production would increase to 102,600 AUMs in the long term. Gradual improvements in wildlife habitat quality would occur in the short term and continue into the long-term. The long-term productivity of wild horses would decrease due to the loss of 337 head.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

No irreversible commitments of resources have been identified. Rangeland developments, disturbing 407 acres of vegetation, would occur in the short term with 7 acres remaining disturbed in the long term resulting in an irretrievable loss of forage production. Vegetation treatments would cause an irretrievable loss in forage production until sites were revegetated. Irretrievable losses of the wildlife resources would include the loss of some big game animals due to increased fencing.

SUMMARY

The completion of 99,616 acres of vegetation treatments and the implementation of 18 new grazing systems would increase the number of acres in upward ecological trend and decrease the acres in a downward trend. A significant increase in the acres of vegetation in a medium ecological condition (seral stage) would occur as a result of treatments. Forage production for livestock would be increased to 88,103 AUMs in the long term. Wildlife habitat would improve on 88,704 acres of mule deer habitat, 34,399 acres of antelope habitat and 19,667 acres of elk habitat. Wild horses would be negatively impacted by the removal of 337 head. Their range, however, would be improved. Ranch operators would see a 47 percent increase in net cash income in the long term.

ALTERNATIVE 3 - LIVESTOCK GRAZING PREFERENCE

OBJECTIVES OF THE ALTERNATIVE

The overall objective of implementing the management actions, proposed under this alternative would be to provide sufficient forage through both management and treatment to restore full livestock grazing preference unit-wide.

To accomplish this there would be some initial adjustments in stocking levels to capacity, but overall stocking for livestock would increase. Over the short term, stocking levels for livestock, wildlife, and wild horses would be changed from 60,757, 2,663, and 8,345 AUMs respectively to 76,514, 2,663, and 1,950 AUMs respectively. Over the long term, stocking for wildlife and wild horses would be held at 2,663 and 1,950 respectively, but livestock stocking levels could shift to as high as 124,589 AUMs. There would be substantial vegetation treatment proposed under this alternative. Treatment of 104,555 acres yielding an estimated 20,911 AUMs would be performed. Supporting these treatments would be numerous facilities. There would be 29 spring developments, 10 wells, 7 reservoirs or catchments, 3 water tanks, 122 water troughs, 211 miles of pipeline, 6 windmills, and 262 miles of fence with 14 cattleguards. These facilities and treatments would be incorporated into 72 proposed grazing management systems. There would be 23 allotments covering nearly 577,000 acres under rest rotation systems, 36 allotments affecting approximately 583,000 acres under deferred rotation systems, continuous seasonal type systems would be applied in 5 allotments, 1 allotment with 40,446 acres would remain unallotted, and grazing would be removed from 544 acres in 2 allotments. Monitoring of climate, vegetation trend, and utilization would be applied unit-wide (see Appendix 5).

ENVIRONMENTAL CONSEQUENCES

IMPACTS TO VEGETATION

Significant Management Actions and Change Agents

New grazing systems would be implemented on 33 allotments, 26 of which are currently grazed continuously during the critical spring period. Adjusting livestock forage allocations to surveyed capacity on 72 allotments, implementing 104,555 acres of vegetation treatments, and reducing wild horses from 552 to 130 animals would also be accomplished under this alternative. Construction of approximately 211 miles of fence, 262 miles of pipeline, and other range developments to improve livestock distribution would affect vegetation to a lesser extent.

For analysis purposes, it was assumed that livestock would be stocked at the levels established by the survey. If permittees choose to run livestock at a level below that identified by the survey, impacts to vegetation could be more positive than those presented in these analyses.

Ecological Condition

Implementation of grazing systems providing periodic spring rest on 26 allotments (491,407 acres) formerly grazed continuously during the spring and reducing livestock forage allocations to surveyed capacity on 31 allotments (330,567 acres) would cause an improvement in desirable forage plants which are currently overutilized. New water developments and fences on allotments currently under a grazing system and the reduction of wild horses to 130 head would help to minimize overutilization of key forage plants on a localized basis, providing an opportunity for establishment of native seedlings.

The greatest changes in ecological condition classes would occur as a result of the 104,555 acres of vegetation treatments initiated in this alternative. Although a significant change in the composition of vegetation would occur on all treated sites, shifts in ecological condition would generally only occur on those sites that are currently not in a medium condition class. Ecological condition expected to be present in the long term would be as follows:

Ecological Condition	Current (Acres)	Long Term (Acres)
Climax	28,805	28,280
High	369,507	350,075
Medium	663,394	716,551
Low	187,715	154,515
Unclassified	14,829	14,829
Total	1,264,250	1,264,250

Ecological Trend

Reduction of livestock forage allocations to surveyed capacity on 31 allotments (330,567 acres), the implementation of new intensive grazing systems on 33 allotments (26 of which currently receive continuous spring use) and the removal of wild horses would cause a general improvement of trend by reducing yearlong use on desirable forage plants.

Although the 104,555 acres of treatments in the alternative would significantly affect existing vegetation, changes in existing trend of comparable significance would not be expected because many of these treated range sites are already in a stable trend.

The following table summarizes the expected ecological trend for the PU:

Ecological Trend	Current (Acres)	Long Term (Acres)
Up	129,246	162,677
Down	94,212	166,058
Static	925,381	920,104
Unclassified	15,411	15,411
Total	1,264,250	1,264,250

Summary

A significant improvement in vigor, diversity and seedling establishment of native forage species would occur in this alternative as a result of the grazing systems and livestock forage allocation reductions on 31 allotments. This would cause an overall increase in the acres of vegetation in an upward ecological trend, and a decrease in acreage in static and downward trend.

As in the planning alternative, vegetation treatments in this alternative would cause a net loss of the number of acres in both the upper and lower ecological condition classes, and a net gain in the medium condition class.

IMPACTS TO LIVESTOCK

Significant Management Actions and Change Agents

Forage allocation would be adjusted on all allotments to the surveyed capacity in the short term. This would mean that 31 allotments would experience a reduction from the current level of use. New grazing systems would be implemented on 33 allotments and 104,555 acres of vegetation treatments would be performed. Wild horse populations would be reduced from 552 to 130 animals.

As discussed in the Vegetation section above it is assumed that stocking levels would be adjusted by the permittee to take advantage of the forage production identified by the survey.

Available Livestock Forage Production

A reduction of 422 wild horses and adjusting all allotments to grazing capacity would result in an allotment-wide increase in available livestock forage from 75,990 to 78,513 AUMs in the short term.

In the long term, a significant increase in production from native ranges would be expected to result from the new grazing systems on 33 allotments (582,844 acres) which would provide periodic rest from livestock grazing. The construction of new fences and water developments on allotments with existing systems which would improve the distribution of livestock.

Vegetation treatments on 104,555 acres would provide an additional 20,911 AUMs of forage by replacing existing vegetation with more productive forage species. Expected production is shown as follows:

	Survey AUMs	Short Term AUMs	Long Term AUMs
Single Use Livestock Forage (Competitive and Noncompetitive)	79,319	79,319	79,319
Competitive Wild Horse Forage	-2,916	-393	-393
Competitive Wildlife Forage	-413	-413	-413
Available Livestock Forage	75,990	78,513	78,513
Management			25,165
Treatment			20,911
Total Available Livestock Forage			124,589

The livestock forage allocations for the Pinyon PU under this alternative are summarized as follows:

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-[a] Term Production	Short-[b] Term Allocation	Long-[a] Term Production	Long-[b] Term Allocation
Livestock	86,121	105,433	60,757	75,990	78,513	78,513	124,589	124,589

[a] This number is constrained by wildlife and wild horse forage needs.

[b] It is assumed that livestock forage would be allocated at the surveyed capacity.

IMPACTS TO WILDLIFE HABITAT

Significant Management Actions

Adjusting livestock numbers to the surveyed capacity, implementing grazing systems, developing range projects and reducing wild horse numbers are specific actions that would cause impacts to wildlife habitat quality. These changes would result primarily by influencing the diversity, amount, availability, quality and quantity of food, cover, and water. Forage would be allocated for current big game numbers only (1,286 mule deer, 600 antelope, and 54 elk) with 1,591 AUMs being allocated to mule deer, 755 AUMs to antelope, and 317 AUMs to elk. In this section, the analysis of these changes in management is related to the quality of big game habitat.

Wildlife Habitat Condition

Mule Deer

Adjustments in livestock stocking levels, implementation of grazing systems, and vegetation treatments on 104,555 acres of mule deer habitat would increase plant diversity and production and would result in improvements in the quality of 5,708 acres of summer range, 67,914 acres of winter range and 30,566 acres of yearlong mule deer habitat. Long-term improvements in mule deer habitat would occur as indicated in Table 4-9.

Table 4-9

Mule Deer Habitat Condition - Alternative 3

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	25,295	26,128	.....
	Fair	24,703	29,578	833
	Poor	17,196	11,488	4,875
		67,194	67,194	5,708
Winter	Good	59,444	68,766	.....
	Fair	236,977	295,569	9,322
	Poor	216,203	148,289	58,592
		512,624	512,624	67,914
Yearlong	Good	32,705	45,070	......
	Fair	85,175	103,376	12,365
	Poor	131,743	101,177	18,201
		249,623	249,623	30,566

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

The reduction of livestock stocking levels to the surveyed capacity would stop the overutilization of key forage plant species on 28 allotments used by mule deer.

Reducing wild horse numbers to 130 head would eliminate their heavy use on 18 of the 39 wildlife special use areas (seeps, springs, etc.). Heavy use by livestock and, in some cases, wild horses, would result in the continued deteriorated condition of 117 acres of riparian habitat (URA 3, Wildlife).

The construction of 259 miles of fence in mule deer habitat would cause some disruptions of deer movements and some deer entanglement would occur. Development of 126 water sources would greatly enhance the distribution of mule deer, and encourage better use of habitat.

Forage allocations to mule deer would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
1,286	1,591	1,286	1,591	1,286	1,591

[a] Allocations of forage based on current demands only.

Antelope

The implementation of grazing systems and the associated changes in stocking levels, seasons of use, developments and treatments on 86,355 acres of antelope habitat would tend to increase plant diversity and stabalize the production of key forage plants, resulting in the improvement of 26,205 acres of antelope habitat. The change in antelope habitat would be as follows:

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	70,637	94,046	......
	Fair	252,796	255,592	23,409
	Poor	300,024	273,819	2,796
		623,457	623,457	26,205

---

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

The construction of 206 miles of fence in antelope habitat would have an adverse impact on antelope movements and cause problems similar to those mentioned above.

Development of 113 water sources would provide additional water and allow the use of areas which previously lacked water.

Adjusting livestock to the surveyed capacity and implementing grazing systems would improve antelope habitat by reducing overutilization of key plant species such as black sagebrush.

Forage allocations to antelope would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
600	755	600	755	600	755

[a] Allocations of forage based on current demands only.

Elk

The adjustments in stocking levels, implementation of grazing systems, construction of developments, treatments on 30,804 acres, and the reduction in wild horse numbers would increase plant diversity and increase forage production, thereby reducing competition between livestock and elk and would result in the improvement in 3,816 acres of summer, 7,812 acres of winter and 8,039 acres of yearlong elk habitat. Long-term improvements would occur as shown in Table 4-10.

Table 4-10
Elk Habitat Condition - Alternative 3

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	1,636	1,866	.....
	Fair	6,242	9,828	230
	Poor	5,753	1,937	3,586
		13,631	13,631	3,816
Winter	Good	1,663	3,249	.....
	Fair	5,597	11,823	1,586
	Poor	16,844	9,032	6,226
		24,104	24,104	7,812
Yearlong	Good	9,379	13,821	.....
	Fair	9,440	13,037	4,442
	Poor	11,838	3,799	3,597
		30,657	30,657	8,039

Four wildlife special use areas and 89 acres of riparian habitat in elk range would remain in poor to fair condition due to use by livestock and wild horses.

The construction of 90 miles of fence in elk habitat would have an adverse impact on elk similar to that mentioned for mule deer. Development of 27 water sources placed in elk range would allow them to graze areas previously used only lightly thereby improving their distribution.

The reduction of livestock and wild horse stocking levels to the surveyed capacity on all allotments would reduce the competition for forage between livestock, wild horses, and elk.

Forage allocations to elk would occur as follows:

Current Needs		Short Term[a]		Long Term	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
54	317	54	317	54	317

[a] Allocations of forage based on current demands only.

Sage Grouse

No significant impacts to sage grouse would be anticipated.

Threatened and Endangered Species

No significant impacts to the bald eagle, peregrine falcon, or the Utah prairie dog would be anticipated.

Summary

Because of the expected changes in vegetation, wildlife habitat quality would be expected to improve. Improvements would occur on 104,188 acres of mule deer habitat, 26,205 acres of antelope habitat, and 19,667 acres of elk habitat.

IMPACTS TO WILD HORSES

Significant Management Actions and Change Agents

The most significant management action affecting wild horses would be the reduction of their numbers from 552 to 130. Actions affecting those horses remaining in the PU after this reduction would be the adjustment of livestock grazing to carrying capacity, establishment of grazing systems and associated vegetation treatments and facilities, all specific management actions affecting wild horse habitat. Wild horses would be allocated 1,950 AUMs in both the short and long term. Also proposed is the reduction of wild horse herds to the following levels:

Herd Unit	Current Levels	Numbers Proposed to be Removed	Proposed Levels
Bible Spring	47	42	5
Blawn Wash	82	72	10
Chokecherry	25	5	20
Four Mile Wash	49	40	9
Frisco	68	60	8
Mt. Elinor	37	37	0
North Hills	62	56	6
Sulphur	135	67	68
Tilly Creek	47	43	4
Totals	552	422	130

Impacts

The reduction of wild horse numbers to 130 head would result in a loss of 422 wild horses or a 76-percent reduction of present herds. The area currently occupied by wild horses would be reduced by 31 percent and would represent a loss of approximately 330,934 acres of wild horse range on 19 allotments.

It is probable that herds of less than 20 animals would not constitute viable herds and could result in inbreeding, a lack of herd vigor and the eventual loss of 6 wild horse herds.

The adjustment of livestock numbers to the survey capacity unit wide would reduce the overutilization of key plants on 284,151 acres and would reduce the pressure on plants used by the remaining 130 wild horses. As a result, the quality of forage for horses would be improved and their competition with livestock reduced.

Utilization and trampling of vegetation surrounding six water sources (seeps, springs, and riparian areas) would continue resulting in deteriorated water quality and poor vegetation condition surrounding these areas.

Vegetation treatments for livestock would, in the long term, produce forage of a higher quality. However, the additional fencing necessary to ensure seeding establishment would restrict their natural movements from some areas. This would also be true of areas which would be placed under grazing management systems requiring 88 miles of additional fencing. The construction of 44 water developments associated with these grazing systems would allow wild horses to make better use of some areas and possibly expand their use in others.

Forage allocations to wild horses would occur as follows:

Current Needs		Short Term		Long Term	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
552	8,345	130	1,950	130	1,950

Summary

Wild horses would be negatively affected by the removal of 422 head and the loss of 330,934 acres of their current range.

IMPACTS TO SOCIOECONOMICS

Significant Management Actions and Change Agents

Adjustment of livestock forage allocations to surveyed production on 72 allotments, establishing new grazing systems on 33 allotments, performing vegetation treatments on 104,555 acres, and reducing wild horses from 552 to 130 animals would be the most significant management actions affecting socioeconomics in this alternative. Less significant management actions include the installation of approximately 211 miles of fences and 262 miles of pipeline, changes in season of use on four allotments not currently under rotational systems, and various range developments. The combined long-term effect of these actions is an overall 91-percent increase in livestock forage.

Impacts to Ranching Operations

The following analysis is based upon figures presented in Table 4-19 found at the end of this chapter.

In the short term, all operation types, except large cattle operations utilizing public lands in summer, would increase herd size in response to an average 27-percent increase in forage allocations. Large cattle yearlong operations would experience the greatest (25 percent) increase in herd size in the short term, increasing herd size from 165 cows to 207 cows. All operation types would increase herd size in the long term with small sheep operations increasing herd size the greatest percentage.

Net cash income would increase an average of 23 percent for all operation types in the short term. Large cattle summer operators would be the only operation type to experience a decrease in net cash income in the short term, losing approximately $6,461 in net cash income annually. However, all operation types would see an increase in net cash income in the long term. This increase would average 103 percent. Variable costs would increase in response to greater herd size. The necessary long-term increase in expenditures would range from $417 for small cattle fall-winter-spring operations to $30,253 for large sheep operations. Increased operation size would lead to an average addtional hired labor requirement of 131 hours in the short term and 420 hours in the long term.

A total of seven operators would be affected by season of use adjustments (other than rotational systems). Of these operations, three are large cattle summer operations, two are small cattle summer operations, and two are large cattle yearlong operations. The effect of these adjustments in season of use is that operators must provide an alternative food source during the period they can no longer utilize public lands. The monetary impact of this postponement is not quantifiable due to the lack of data concerning alternative feed sources for Pinyon livestock operations, but is expected that the loss of 1 or 2 months' feed could be handled through use of base property for a greater period of time or by feeding either purchased or produced hay without severely impacting the ranch operation.

Impacts to the Region and its Communities

This alternative would result in a regional increase in direct agriculturally related expenditures of approximately $243,877 in the short term and $735,184 in the long term. Increased expenditures in the agricultural sector would strengthen agricultural support industries within and adjacent to the planning unit. The effect of these increases in ranching expenditures on the region-wide economy would be slight, representing only 0.2 percent of the combined gross taxable sales of Beaver and Iron Counties in the short term and 0.5 percent in the long term. These percentages are based on the assumption of no increase in gross taxable sales over the 20-year planning horizon (gross taxable sales are projected from the first three quarters of 1981; Five County Association of Governments, 1981).

The general increase in the sizes of ranching operations under this alternative would require additional hired farm labor. Approximately four full-time jobs would be created in the short term and 12 jobs in the long term.

Summary

Only minor socioeconomic impacts would result under this alternative. Most of these impacts would be in the form of positive benefits to both ranchers and agricultural support industries. Individual ranch operations would see significant increases in net cash income, averaging 23 percent for all Pinyon ranchers in the short term and 103 percent in the long term. The effect of these increases would be a general increase in the stability of ranching operations and a slight strengthening of agricultural support industries. The overall impact to the regional economy would be very slight.

UNAVOIDABLE ADVERSE IMPACTS

Rangeland developments would result in disturbances to the vegetation and therefore result in adverse impacts to 507 acres of vegetation in the short term with 12 acres remaining disturbed in the long term. Increased losses of big game due to entanglement could be expected with the construction of 262 miles of livestock management fences. Adverse impacts to wild horses would result from the removal of 422 wild horses.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

As a result of the management actions proposed in this alternative, livestock forage production would increase to 124,589 AUMs in the long-term. Gradual improvements in wildlife habitat quality would occur in the short term with big game habitat of a higher quality being maintained in the long term. A loss of wild horse productivity would continue into the long term.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Rangeland developments disturbing 507 acres would occur in the short term with 12 acres remaining disturbed in the long-term resulting in an irretrievable loss of forage production. Vegetation treatments would cause an irretrievable loss in forage production until sites were revegetated. Irretrievable losses of the wildlife resources would include the loss of some big game animals due to fencing.

SUMMARY

As a result of the management actions proposed in this alternative, a significant improvement in vigor, diversity, and seedling establishment of native plant species would occur on 31 allotments. This would cause an overall increase in the acres of vegetation in an upward ecological trend. A net loss of acres in the upper and lower ecological condition classes and a net gain in the medium condition class would result on areas treated. Forage available to livestock would increase to 124,589 AUMs. Improvements in wildlife habitat would occur on 104,188 acres of mule deer habitat, 26,205 acres of antelope habitat, and 19,667 acres of elk habitat. Wild horses would be negatively impacted by the loss of 422 head and the loss of 330,934 acres of their current range. Ranch operations would see significant increases in net cash income, averaging 23 percent in the short term and 103 percent in the long term.

ALTERNATIVE 4 - RESIDENT RESOURCE VALUES

OBJECTIVES OF THE ALTERNATIVE

The objectives of the management actions proposed under this alternative would be to resolve conflicts with resident resources and to manage the Pinyon Planning Unit in a manner that favors its resident resources - that is wildlife, wild horses, etc. rather than livestock. Since there are conflicts between wildlife and wild horses, a subalternative is devoted to each.

SUBALTERNATIVE 1 - WILDLIFE

The objective of this subalternative would be to improve the quality of wildlife habitat. Management goalds would be to provide quality forage for prior stable or long-term wildlife population levels and ecological conditions which would promote a high degree of plant diversity and quality wildlife forage. In this subalternative forage conflicts would be resolved in favor of wildlife, but primarily through implementing livestock grazing systems or reducing wild horse numbers. These actions closely parallel the actions of the Livestock Grazing Preference Alternative. Treatments for wildlife would be essentially the same as those proposed in the Planning Alternative, but with additional protection for special habitat features such as aspen groves, springs, riparian areas, etc. which affect habitat quality but are not directly tied to forage availability (habitat should not be confused with ecological condition). In some cases, old treatments which do not provide a variety of browse, grasses, and forbs used by wildlife would be reseeded to improve their plant diversity. Also, there would be the elimination of livestock grazing on a limited number (three) allotments until a specified vegetation response is achieved (within 10 years). Overall, the objective of these actions would be to provide high quality wildlife habitat over the long term that would be capable of supporting prior stable or long-term wildlife numbers.

Allocation levels would be shifted over both the short term and the long term. Levels for livestock, wildlife, and wild horses would change from 60,757, 2,663, and 8,345 AUMs respectively in the short term to 76,051, 2,663, and 2,010 rspectively and 102,024, 5,425, and 2,010 AUMs respectively in the long term. There would be vegetation treatments proposed for 107,260 acres yielding an estimated 16,653 AUMs. Facilities that would be proposed are 36 spring or riparian area developments, 5 wells, 47 reservoirs or catchments, 1 water tank, 66 water troughs, 118 miles of pipeline, 5 windmills, and 222 miles of fence with 1 cattleguard. Intensive grazing management systems would be proposed for 60 allotments. Rest rotation systems would be proposed for 24 allotments covering over 588,000 acres, deferred rotation systems would be proposed on nearly 583,000 acres in 36 allotments, 11 allotments covering nearly 45,000 acres would be placed under continuous seasonal systems, and two allotments with 48,430 acres would remain unallocated. Monitoring of climate, vegetation trend, and utilization would be applied unit-wide.

ENVIRONMENTAL CONSEQUENCES

IMPACTS TO VEGETATION

Significant Management Actions and Change Agents

Initiating new intensive grazing systems on 34 allotments (593,999 acres), adjusting livestock forage allocations to surveyed production on 72 allotments, implementing 107,260 acres of vegetation treatments, and reducing wild horses from 552 to 146 animals would be the most significant actions affecting vegetation in this alternative. Construction of fences, pipelines, and other water facilities proposed in this alternative would have only a minimal impact to vegetation.

Although it was assumed for analysis purposes that livestock would be grazed at surveyed capacity under this alternative, permittees could graze livestock at levels lower than that indicated by the survey, resulting in more positive impacts than those presented.

Ecological Condition

The 34 grazing systems proposed under this alternative would have a significant effect on the condition and composition by weight of desirable forage species, especially on those 26 allotments currently grazed yearly during the spring growing season. Increases in native forage plant populations would also result from the reduction of livestock grazing to surveyed capacity on 31 allotments, and the better distribution of livestock resulting from the numerous water developments and fences proposed under this alternative. The increase in native forage plant populations would not, however, necessarily result in correspondingly significant shifts in ecological condition because of the dominance of pinyon, juniper, or sagebrush on many sites.

Vegetation treatments (proposed on 107,260 acres) would, understandably, have a more substantial effect on ecological condition because of the removal of most existing vegetation. Range sites currently in the low, high, and climax ecological condition classes, would, after treatment, generally be classified as medium ecological condition. Expected ecological conditon in the PU would be as follows:

Ecological Condition	Current (AUMs)	Long Term (AUMs)
Climax	28,805	26,561
High	369,507	351,179
Medium	663,394	712,089
Low	187,715	159,592
Unclassified	14,829	14,829
Total	1,264,250	1,264,250

Ecological Trend

Implementation of new grazing systems, reducing livestock forage allocation to surveyed capacity on 330,567 acres (31 allotments) and a reduction of 406 horses (consuming 6,090 AUMs of forage) would cause a general improvement of existing trend by reducing utilization on desirable forage plants. Especially significant would be the grazing systems proposed on 26 allotments (491,407 acres) currently receiving continuous spring use.

Substantial changes to trend would also be caused by the execution of 107,260 acres of vegetation treatments. Especially affected would be those range sites currently in an upward or downward trend. Expected impacts to ecological trend are as follows:

Ecological Trend	Current Acres	Long Term Acres
Up	129,246	155,589
Down	194,212	159,767
Static	925,381	933,483
Unclassified	15,411	15,411
Total	1,264,250	1,264,250

Summary

Ecological condition would be affected most significantly by vegetation treatments in this alternative with a net decrease in acres in the climax, high, and low ecological condition classes and a net increase in the medium condition class.

An overall increase in the acres of vegetation in upward and static ecological trend classes would occur as a result of the 34 new grazing systems, 107,260 acres of vegetation treatments, and reductions in livestock forage allocations on 31 allotments.

IMPACTS TO LIVESTOCK

Significant Management Actions and Change Agents

Converting 107,260 acres of generally unproductive native rangeland to the more productive introduced species by vegetation treatments would be the most significant action occurring under this alternative. Livestock numbers would be reduced from current average licensed use levels to surveyed capacity on 31 allotments, 34 allotments would be managed under grazing systems providing periodic rest during the grazing season, and wild horses would be reduced from 552 to 146 head.

As discussed in the Impacts to Vegetation section above, it was assumed that livestock would be grazed at the surveyed capacity even though permittees could activate use at a lower level. In the short term, for up to 10 years, three allotments (1,140 AUMs) would have livestock use removed from them. In the long term, to improve wildlife forage species, 16 allotments would be grazed at surveyed capacity levels, even if additional livestock forage would become available due to natural improvement.

Available Livestock Forage Production

In the short term, adjusting livestock grazing allocations to surveyed capacity on all allotments and reducing wild horse numbers by 406 animals would result in an increase of livestock forage from 75,990 AUMs to 78,192 AUMs.

In the long term, executing 107,260 acres of vegetation treatments, implementing grazing systems on 34 allotments and constructing 171 miles of fence, 126 miles of pipeline, and 65 water troughs to improve livestock distribution, would result in an increase of available livestock forage to 103,463 AUMs.

The most significant increase in forage production would result from replacing less productive native species with more productive introduced forage species by way of vegetation treatments. Available forage production would be as shown in Table 4-11.

Table 4-11

Livestock Forage Production - Alternative 4

	Survey AUMs	Short Term AUMs	Long Term AUMs
Single Use Livestock Forage Competitive & Non-Competitive)	79,319	79,319	79,319
Competitive Wild Horse Forage	-2,916	-715	715
Competitive Wildlife Forage	-413	-413	-852
Available Livestock Forage	75,990	78,191	77,752
Management			9,058
Treatment			16,653
Total Available Livestock Forage			103,463

Allocations of forage to livestock in the Pinyon PU under this alternative would be:

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-[a] Term Production	Short-Term Allocation	Long-Term Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	75,990	78,191	[b]75,051	103,463	[c]102,024

[a] This number is constrained by wildlife and wild horse forage needs.

[b] On three allotments livestock would not be allowed use for up to 10 years to improve wildlife forage species. This would result in no use of 1,140 AUMs of livestock forage production.

[c] On 16 allotments an increase of 1,439 AUMs of livestock forage resulting from natural improvements of vegetation would not be available for allocation to livestock. Livestock numbers would be kept at current surveyed levels to improve wildlife forage on these allotments.

Summary

Available livestock forage would increase from 75,990 AUMs to 124,589 AUMs primarily as a result of vegetation treatments and new intensive grazing systems. As a result of efforts to improve wildlife forage speices, 1,140 AUMs of livestock forage would be unavailable to livestock in the short term, and 1,439 AUMs in the long term.

IMPACTS TO WILDLIFE HABITAT

Significant Management Actions and Change Agents

Reducing the utilization of vegetation by reducing the level of livestock use, establishing grazing systems, developing vegetation treatments and facilities, and reducing wild horse numbers are specific actions which would cause direct changes to the vegetation. In addition, grazing on three allotments would be removed in the short term to allow key wildlife forage species to improve in quality and vigor. These changes would affect the wildlife habitat by increasing the diversity, amount, and availability of food, cover, and water.

This alternative provides for the protection of riparian areas and special habitat features (seeps, springs and small aspen groves) from livestock and wild horse use. These areas are used by mule deer and elk and are especially important during the summer months.

All fences proposed in this alternative would be designed to allow easy access to big game but still provide livestock control. All fences in mule deer and elk habitat would be constructed no more than 40 inches in height with the bottom wire at least 16 inches above the ground surface. Areas used by antelope would have fences constructed no more than 38 inches in height with 14 to 16 inches clearance from the bottom wire to the ground surface. The bottom wire would also be smooth and barbless. No woven wire fences would be constructed.

All treatments proposed would provide a variety of browse, grasses, and forbs used by wildlife. In some cases, old treatments which do not provide this diversity would be reseeded to improve their plant diversity. Sufficient forage to support 1,286 mule deer, 600 antelope, and 54 elk would be allocated for current big game demands (mule deer - 1,591 AUMs, antelope - 755 AUMs, and elk - 317 AUMs) in the short term. In the long term big game would be allocated sufficient forage for 2,482 mule deer, 1,070 antelope, and 178 elk, the long term goals or prior stable desires established by UDWR. Mule deer would be allocated 3,041 AUMs, antelope 1,313 AUMs, and elk 1,053 AUMs in the long term. The analysis of how these management actions would affect the wildlife habitat is given below.

Wildlife Habitat Condition

Mule Deer

The adjustment of stocking levels, establishment of grazing systems, vegetation treatments on 93,805 acres of mule deer habitat, the removal of wild horses on six allotments and their reduction to 1971 levels on remaining allotments would increase plant diversity, forage production, and reduced competition for key forage plants and thereby result in the improvements in the quality of 9,927 acres of summer range, 75,457 acres of winter range, and 36,140 acres of yearlong mule deer habitat. Long-term improvements would occur as shown in Table 4-12.

Table 4-12

Mule Deer Habitat Condition - Alternative 4

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	25,295	29,305	.....
	Fair	24,703	30,620	4,010
	Poor	17,196	7,269	5,917
		67,194	67,194	9,927
Winter	Good	59,444	73,764	......
	Fair	236,977	298,114	14,320
	Poor	216,203	140,746	61,137
		512,624	512,624	75,457
Yearlong	Good	32,705	48,177	......
	Fair	85,175	105,843	15,472
	Poor	131,743	95,603	20,668
		249,623	249,623	36,140

The removal of wild horses from six allotments and the protection of 39 wildlife special use areas (seeps, springs, aspen groves) and 117 acres of riparian habitat from wild horse and livestock use would result in a benefit to mule deer (URA 3, Wildlife). Impacts resulting from the installation of 159 miles of livestock management fence in this alternative would be mitigated by fence design. However, fence modification in the form of let-down fencing would be necessary in areas heavily traveled by mule deer or along migration routes to avoid deer entanglement or disruption of movements. Site specific analysis would be made during the development of allotment management plans. One hundred and twelve water developments would enhance mule deer habitat by providing additional water and better distribution. This would be especially true in mule deer summer range where water is limited (URA 3, Wildlife).

The reduction of livestock stocking levels to the surveyed capacity would stop the current overutilization of key forage plant species on 28 allotments used by mule deer.

Forage allocations to mule deer would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
1,286	1,591	1,286	1,591	2,482	3,041

[a] Allocations of forage based on management goals and increases in the amounts of forage allocated would occur as needs arise.

Antelope

Adjusting the level of livestock use implementing grazing systems, changing season of use and developments and treatments on 79,259 acres of antelope habitat would result in increased plant diversity, and stabilized production of key forage plants used by antelope. The reestablishment of key browse species and additional vegetation treatments would be the primary contributors in improving 40,120 acres of antelope habitat. Changes in antelope habitat would be as follows:

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	70,637	99,231	......
	Fair	252,796	264,322	28,594
	Poor	300,024	259,904	11,526
		623,457	623,457	40,120

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

Development of 114 water sources would provide additional water, encourage better use of current range and improve the overall quality of antelope habitat.

The construction of 125 miles of fence would have an impact on antelope movements. However, this impact would be minimized by designing fences which would allow as much movement as possible.

Adjusting livestock stocking levels to the surveyed capacity and implementing grazing systems would improve antelope habitat by reducing overutilization and allowing rest on key plant species such as black sagebrush, bud sagebrush, and fourwing saltbush.

Forage allocations to antelope would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
600	755	600	755	1,070	1,313

[a] Allocations of forage based on management goals and increases in the amounts of forage allocated would occur as needs arise.

Elk

The adjustments in livestock stocking levels, implementing grazing systems, developments and treatments on 22,272 acres of elk habitat and the removal of wild horses from six allotments used by elk would reduce competition for forage between elk and wild horses and would result in increased plant diversity and forage production. This would cause improvements in 4,658 acres of summer, 7,812 acres of winter and 10,839 acres of yearlong elk range. Long-term improvements in elk habitat would occur as shown in Table 4-13:

Table 4-13
Elk Habitat Condition - Alternative 4

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	1,636	2,417	.....
	Fair	6,242	10,119	781
	Poor	5,753	1,095	3,877
		13,631	13,631	4,658
Winter	Good	1,663	3,249	.....
	Fair	5,597	11,823	1,586
	Poor	16,844	9,032	6,226
		24,104	24,104	7,812
Yearlong	Good	9,379	13,389	.....
	Fair	9,440	16,269	4,010
	Poor	11,838	999	6,829
		30,657	30,657	10,839

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

The impact to elk resulting from the construction of 58 miles of fence would be minimized using fence design standards discussed earlier.

Development of 32 water sources in elk use areas would benefit elk by providing additional water and would allow elk to make better use of their habitat.

The removal of wild horses from six allotments used by elk and the protection of four wildlife special use areas and 89 acres of riparian habitat from wild horse and livestock use would result in a benefit to elk habitat (URA 3, Wildlife).

The reduction of livestock stocking levels to the surveyed capacity and implementing grazing systems would improve elk habitat by reducing overutilization and allowing rest on key plant species.

Forage allocations to elk would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
54	317	54	317	200	1,053

[a] Allocations of forage based on management goals and increases in the amounts of forage allocated would occur as needs arise.

Sage Grouse

No significant impacts to sage grouse would be anticipated.

Threatened and Endangered Species

No significant impacts to the bald eagle, peregrine falcon, or the Utah prairie dog would be anticipated.

Summary

Because of changes in vegetation production and wild horse removal, this alternative would result in the improvement of 121,524 acres of mule deer habitat, 40,120 acres of antelope habitat and 23,309 acres of elk habitat.

IMPACTS TO WILD HORSES

Significant Management Actions and Change Agents

Adjusting livestock levels to survey capacity, and establishing grazing systems, treatments and associated facilities are specific management actions which would affect wild horse habitat. Wild horses would be allocated 2,190 AUMs in both the short and long term. Development of 65 water sources would occur on wild horse range. Fences in this alternative would be constructed a maximum of 40 inches in height, which would be less restrictive than the normal fence design of 48 inches. This alternative proposes that wild horses be removed from six allotments which are used by elk and adjusted to the 1971 levels on 30 allotments. Wild horse numbers per herd would be as follows:

Herd Unit	Current Levels	Numbers Proposed to be Removed	Proposed Levels
Bible Spring	47	42	5
Blawn Wash	82	66	16
Chokecherry	25	0	29
Four Mile Wash	49	35	14
Frisco	68	55	13
Mt. Elinor	37	22	15
North Hills	62	35	27
Sulphur	135	120	15
Tilly Creek	47	35	12
	552	410	146

Impacts

Under this subalternative wild horse numbers would be reduced by 410 from 552 horses to 146. There would be a corresponding reduction of their range by 29 percent or 302,232 acres. Only the Chokecherry herd would be allowed to increase. Major losses of wild horse range would occur where horses would be totally removed on six allotments to benefit big game.

By reducing the wild horse herds in some areas to less than 20 animals, the genetic viability of that herd may be lost and could eventually result in the loss of that entire herd. Herds of 20 animals or less would require intensive management and the introduction of new blood lines to insure continuation of the herd.

Fencing would protect water sources and the associated vegetation from heavy use by wild horses. Water would be made available to horses on a more reliable basis outside the protected areas.

Vegetation treatments would be performed on 58,842 acres and the fences required to protect these treatments from grazing would exclude some areas from wild horse use. Fence design would allow adult horses to move unrestricted; however, colts would be unable to cross fences necessary for livestock control. This problem would involve approximately 65 miles of proposed fencing and would result in a detrimental impact on wild horses by restricting their wild and free-roaming nature. Wild horses would also be restricted from 39 wildlife special use areas and from 113 acres of riparian habitat. These areas are often heavily used by horses for loafing cover and forage.

The construction of 65 water developments on wild horse range would allow wild horses to make better use of their present range.

The reduction of livestock numbers to the survey capacity unit-wide would stop the overutilization of key plants on 284,151 acres and would reduce the pressure on plants by wild horses. As a result, the quality of forage for the remaining horses would be improved and their competition with livestock reduced.

Forage allocations to wild horses would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
552	8,345	146	2,190	146	2,190

[a] Allocations of forage based on management goals and increases in the amounts of forage allocated would occur as needs arise.

Summary

The reduction of wild horse numbers to 146 would be a negative impact to wild horses and would result in a loss of 410 wild horses. Some improvements to wild horse habitat would occur due to reduced grazing use and intensive grazing management practices and would benefit the remaining 146 animals.

IMPACTS TO SOCIOECONOMICS

Significant Management Actions and Change Agents

Establishing intensive grazing systems on 34 allotments, adjusting livestock forage allocations to surveyed production on 72 allotments, vegetation treatments on 108,044 acres, and reducing wild horse numbers from 552 to 146 would be the most significant management actions affecting socioeconomics under this alternative. Less significant management actions include the construction of fences, pipelines, and other water facilities; and changes in the season of use on four allotments. The combined long-term effect of these actions would be an average 94-percent increase in available livestock forage for all operation types on the planning unit.

Impacts to Ranching Operations

The following analysis is based upon figures presented in Table 4-19 Alternative 4, Wildlife found at the end of this chapter.

In the short term all operation types except small cattle summer setups would increase herd size in response to the 18 percent short-term increase in livestock forage. Most short-term increases in herd size would be small. The greatest percentage increase would occur in large cattle yearlong operation types, averaging an increase of 24 percent (39 cows). All operation types would increase herd size in the long term with small sheep operations increasing herd size by the greatest percentage.

Net cash income would increase an average of 16 percent in the short term although one ranch category, small cattle summer, would lose an average of $143 annually in the short term. All operation types would experience an increase in net cash income in the long term. This increase would average 80 percent for all operations. The greatest percentage increase in net cash income in the long term would be experienced by small cattle summer operations but the greatest absolute increase would be in large sheep operations, averaging an increase of $125,600 annually. Variable costs would increase in response to increased herd size. The necessary long-term increase in annual expenditures would range from $14 for small cattle fall-winter-spring operations to $28,104 for large sheep operations. Increased operation size would lead to an average additional hired labor requirement of 91 hours in the short term and 365 hours in the long term.

A total of seven operators would be affected by season of use adjustments (other than rotational systems). Of these operations, three are large cattle summer operations, two are small cattle summer operations, and two are large cattle yearlong operations. The effect of these adjustments in season of use would be that operators must provide an alternative food source during the period they can no longer utilize public lands. The monetary impact of this postponement is not quantifiable due to the lack of data concerning alternative feed sources of Pinyon livestock operations but is expected that the loss of one or two month's feed could be handled through use of base property for a greater period of time or by feeding either purchased or produced hay without severely impacting the ranch operation.

Impacts to the Region and its Communities

This alternative would result in an increase in direct agriculturally related expenditures of approximately $148,672 in the short-term and $655,424 in the long term. Increased expenditures in the agricultural sector would strengthen agricultural support industries within and adjacent to the planning unit. The effect of these increases in ranching expenditures on the region-wide economy would be slight, representing only 0.1 percent of the combined gross taxable sales of Beaver and Iron Counties in the short term and 0.5 percent in the long term. These percentages are based on the assumption of no increase in gross taxable sales over the 20-year planning horizon (gross taxable sales are projected from the first three quarters of 1981; Five County Association of Governments, 1982).

The general increase in the sizes of ranching operations under this alternative would require additional hired farm labor. Approximately three full-time jobs would be created in the short term and 11 jobs in the long term.

Summary

Only minor socioeconomic impacts would result under this alternative. Most of these impacts would be in the form of positive benefits to both ranchers and agricultural support industries. Individual ranch operations would see significant increases in net cash income, averaging 16 percent for all Pinyon ranchers in the short term and 80 percent in the long term. The effect of these increases would be a general increase in the stability of ranching operations and a slight strengthening of agricultural support industries. The overall impact to the regional economy would be very slight.

UNAVOIDABLE ADVERSE IMPACTS

Rangeland developments would result in disturbances to the vegetation and, therefore, result in adverse impacts to 326 acres of vegetation in the short term with 12 acres remaining disturbed in the long term. The removal of 410 wild horses would also be an adverse impact.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Available livestock forage production would increase to 703,463 AUMs in the long term. Improvements in wildlife habitat quality would occur in the short term and continue into the long term. The long-term productivity of wild horses would decrease due to the removal of 410 head.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Rangeland developments, disturbing 326 acres would occur in the short term with 12 acres remaining distrubed in the long term resulting in an irretrievable loss of forage production. Vegetation treatments would cause an irretrievable loss in forage production until sites were revegetated.

SUMMARY

As a result of the management action proposed in this alternative, a significant improvement in vigor, diversity, and seedling establishment of native plant species would occur on 31 allotments. This would cause an overall increase in the acres of vegetation in an upward ecological trend. A net loss of acres in the upper and lower ecological condition classes and a net gain in the medium condition class would result on areas treated. Forage available to livestock would increase to 103,463 AUMs. Improvements in wildlife habitat would occur on 121,524 acres of mule deer habitat, 40,120 acres of antelope habitat, and 23,309 acres of elk habitat. Wild horses would be negatively impacted by the loss of 410 head and the loss of 302,232 acres of their current range. Ranch operations would see significant increases in net cash income, averaging 16 percent in the short term and 80 percent in the long term.

SUBALTERNATIVE 2 - WILD HORSES

This subalternative addresses the effects of favoring the resident wild horse herds in the Pinyon Planning Unit in both forage allocations and proposed management. Under this subalternative, the existing range of each herd unit would be maintained, herd size in all but the Blawn Wash and the Sulphur herds would be retained at existing levels. The Blawn Wash herd would be allowed to increase from 82 to around 210, and the Sulphur herd would be allowed to increase from 135 to around 310, all of which would result in an overall targeted objective of around 855 wild horses unit-wide. Expanding both herds would improve the public's opportunity to observe wild horses. Enlarging the Sulphur herd and, if possible, the reintroduction of the "Spanish Barb" bloodline would help preserve what remains of the bloodline and reduce the problems of inbreeding and genetic deficiencies. Unit-wide, a number of water developments would be implemented to improve general herd distribution and to protect small springs and seeps from damage by horses. There would be no new livestock or wildlife treatments or facilities proposed under this alternative. Livestock and wildlife forage allocations would be adjusted to surveyed capacity. Additional horse forage needs would be taken from livestock. Existing wildlife numbers would be maintained into the future.

ENVIRONMENTAL CONSEQUENCES

IMPACTS TO VEGETATION

Significant Management Actions and Change Agents

Adjusting livestock forage allocations to surveyed capacity on 71 allotments and increasing wild horses from 552 to 855 animals would be the most significant actions affecting vegetation in the alternative. No range developments to improve livestock distribution or vegetation treatments to increase forage production would occur under this alternative. Continuous seasonal spring grazing would continue on 35 allotments (534,176 acres) while 26 allotments (576,933 acres) would be managed under a rest rotation or deferred rotation grazing system. Thirty-seven spring developments along with 3 wells, 2 reservoirs and 40 watering troughs would be developed to improve distribution of wild horses. It was assumed for analysis purposes that stocking levels would be at the surveyed capacity.

Ecological Condition

Ecological condition would experience little change in the long term because of the small number of change agents occuring under this alternative except possibly in those 26 allotments that would continue to receive spring grazing. Overutilization of forage resulting from increased pressure from wild horses and poor distribution of livestock would cause a shift to lower ecological condition classes on some range sites. Generally, however, reduced forage allocations to livestock would tend to reduce potential impacts to ecological condition. The expected ecological condition in the long term would be as follows:

Ecological Condition	Current Acres	Long-Term Acres
Climax	28,805	28,405
High	369,507	363,739
Medium	663,394	665,980
Low	187,715	191,297
Unclassified	14,829	14,829
Total	1,264,250	1,264,250

Ecological Trend

The continuation of livestock grazing without periodic rest during the critical growing season on 26 allotments and the increase in yearlong wild horse use would cause a continued decline in vigor of desirable forage species, particularly grasses, on affected allotments. Those sites currently receiving grazing under a rest rotation or deferred rotation system (26 allotments, 576,933 acres) would be expected to show a slight improvement in vigor of native forage speices. Expected long-term ecological trend would be as follows:

Ecological Trend	Current Acres	Long-Term Acres
Up	129,246	110,087
Down	194,212	204,912
Static	925,381	933,840
Unclassified	15,411	15,411
Total	1,264,250	1,264,250

Summary

Continuation of spring grazing on 35 allotments and increased yearlong horse use would cause a decrease in acres in an upward ecological and an increase in acres in static and downward trends due to continued pressure on desirable forage speices.

Very slight changes in ecological condition would occur primarily as a result of spring use and increased wild horse numbers.

IMPACTS TO LIVESTOCK

Significant Management Actions and Change Agents

Increasing wild horses from 552 to 855 animals, adjusting livestock forage allocations to surveyed capacity on 71 allotments, and continuing spring grazing on 35 allotments would be the most significant actions affecting vegetation in this alternative.

Table 4-14

Mule Deer Habitat Condition - Alternative 4

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	25,295	22,864	2,431
	Fair	24,703	20,654	4,049
	Poor	17,196	23,676	.....
		67,194	67,194	6,480
Winter	Good	59,444	59,444	.....
	Fair	236,977	232,706	4,271
	Poor	216,203	220,474	.....
		512,624	512,624	4,271
Yearlong	Good	32,705	22,156	10,549
	Fair	85,175	94,551	1,173
	Poor	131,743	132,916	......
		249,623	249,623	11,722

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

Increases in wild horse numbers would also result in continued negative impacts to mule deer by increasing the effects of wild horse use on 39 wildlife special use areas (springs, seeps, aspen groves) and 117 acres of riparian habitat. These areas are especially important to mule deer during the summer months because they provide water and succulent forage (URA 3, Wildlife).

The reduction of livestock stocking levels to the surveyed capacity would stop the current overutilization of key forage plant species on 28 allotments used by mule deer.

Forage allocations to mule deer would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
1,286	1,591	1,286	1,591	1,286	1,591

[a] Allocations of forage based on current demands.

Antelope

Reducing livestock numbers to the survey capacity would be the primary management action which would affect the vegetation and therefore antelope habitat in this alternative. Significant impacts to antelope habitat would occur especially in allotments where sheep use is causing a reduction in key antelope forage species, particularly black sagebrush. No significant management actions are proposed in this alternative which would reduce this loss of habitat quality, therefore yearlong antelope habitat would decline on 14,187 acres. Long-term changes in antelope habitat would occur as follows:

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	70,637	60,481	10,156
	Fair	252,796	248,765	4,031
	Poor	300,024	314,211	......
		623,457	623,457	14,187

Development of 34 water sources proposed for wild horses would be constructed in areas used by antelope.

Adjusting livestock stocking levels to the surveyed capacity would reduce the utilization of key forage species used by antelope, primarily black sagebrush, bud sagebrush, and fourwing saltbush.

Forage allocations to antelope would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
600	755	600	755	600	755

[a] Allocations of forage based on current demands.

Elk

The adjustment of livestock levels to the carrying capacity, increases in wild horse numbers, and the development of water sources are actions which would result in heavy utilization of plants used by elk and would increase competition for areas used for thermal cover. Increasing wild horse numbers would result in declines in 1,649 acres of summer, 656 acres of winter and 8,548 acres of yearlong elk habitat. Long-term changes in elk habitat would occur as shown in Table 4-15.

Table 4-15
Elk Habitat Condition - Alternative 4

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	1,636	1,283	353
	Fair	6,242	4,946	1,296
	Poor	5,753	7,402	.....
		13,631	13,631	1,649
Winter	Good	1,663	1,663	...
	Fair	5,597	4,941	656
	Poor	16,844	17,500	...
		24,104	24,104	656
Yearlong	Good	9,379	2,456	6,923
	Fair	9,440	14,738	1,625
	Poor	11,838	13,463	.....
		30,657	30,657	8,548

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

Four wildlife special use areas and 89 acres of riparian habitat on elk range would remain in poor to fair condition due to use by livestock and wild horses.

Eleven water developments in elk habitat for wild horses would benefit elk by allowing them to graze areas previously used only lightly and improve their distribution.

The reduction of livestock stocking levels to the surveyed capacity on all allotments would reduce the competition for forage between livestock and elk.

Forage allocations to elk would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
54	317	54	317	54	317

[a] Allocations of forage based on current demands.

Sage Grouse

No significant impacts to sage grouse would be anticipated.

Threatened and Endangered Species

No significant impacts to the bald eagle, peregrine falcon, or the Utah prairie dog would be anticipated.

Summary

Because of the limited number of significant change agents being proposed in this subalternative that would halt or reverse existing downward trends of wildlife habitat quality, losses in big game habitat quality would occur. Declines in habitat quality would occur on 22,473 acres of mule deer habitat, 14,187 acres of antelope habitat and 10,853 acres of elk habitat.

IMPACTS TO WILD HORSES

Significant Management Actions and Change Agents

The reduction of livestock grazing to the carrying capacity and the increase in wild horse numbers to 778 head in the short term and 855 head in the long term are specific management actions proposed in this alternative which would affect the wild horse resource. The development of 42 water sources would occur on wild horse range. Reintroduction of the Spanish barb bloodlines would be made if possible. Wild horses would be allocated 11,670 AUMs in the short term and 12,825 AUMs in the long term. Allocation of competitive forage for wild horses would be taken from livestock in the specific allotments affected. Proposed wild horse herd numbers would be at the following levels:

Herd Unit	Current Levels	Proposed Short-Term Levels	Proposed Long-Term Levels	Increase from Current Levels
Bible Spring	47	47	47	0
Blawn Wash	82	171	210	128
Chokecherry	25	25	25	0
Four Mile Wash	49	49	49	0
Frisco	68	68	68	0
Mt. Elinor	37	37	37	0
North Hills	62	62	62	0
Sulphur	135	272	310	175
Tilly Creek	47	47	47	0
Totals	552	778	855	303

Impacts

The increase in wild horse numbers to 855 would benefit wild horses. Herds of the proposed size would be considered viable herds and would not require the intensive management of smaller herd sizes. Wild horses would not be restricted by additional fencing, therefore their wild and free-roaming nature would not be affected. The condition of wild horse habitat would be stabilized since grazing by livestock would not be permitted to exceed the surveyed capacity. This would stop the overutilization of key plants on 284,151 acres and would reduce the pressure on plants used by wild horses. As a result, the quality of forage for horses would be improved and their competition with livestock reduced.

The construction of 42 water developments would allow wild horses to make better use of their range.

Utilization and trampling of vegetation surrounding 31 water sources (seeps, springs, and riparian areas) would result in a continued deteriorated water quality and poor vegetation condition surrounding these areas.

Forage allocations to wild horses would occur as follows:

Current Needs		Short Term		Long Term	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
552	8,345	778	11,670	855	12,825

Summary

Wild horse numbers would be increased to 855 in the long-term, an increase of 303 head.

IMPACTS TO SOCIOECONOMICS

Significant Management Actions and Change Agents

Adjusting livestock forage allocations to surveyed production on 71 allotments and allowing wild horse numbers to increase from 552 to 855 animals would be the most significant actions affecting socioeconomics in this alternative. Management actions in this alternative would result in an overall long-term increase in forage available to livestock of 31 percent.

Impacts to Ranching Operations

The following analysis is based upon figures presented in Table 4-19 Alternative 4, Wild Horses found at the end of this chapter.

In the short term two operation types, small cattle summer and large cattle summer, would reduce herd size in response to a decrease in forage available to livestock. The remaining five operation types would increase herd size to take advantage of increases in available forage. The greatest percentage increase in short-term herd size would be made by large sheep operators, increasing herd size from an average of 1,249 ewes to 1,572. In the long term two operation types would still experience a reduction in herd size. The remaining five operation categories would increase herd size in the long term. Under this alternative, forage allocations and, correspondingly, herd sizes differ little between the short and long terms. Large sheep operators, as in the short term, would increase herd size by the greatest percentage (31 percent) in the long term.

Two operation types, small cattle summer and large cattle summer, would experience losses in net cash income in both the short and long terms. Small cattle summer operations would experience a $128 annual loss in net cash income in the long term and large cattle summer operations would see a $1,326 loss in the long term. The remaining five types of livestock operations would realize increases in net cash income in the long term. The greatest absolute long-term increase in net cash income would occur in large sheep operations, gaining $22,197 in net cash income annually. Variable costs would decrease for the two operation types decreasing herd size but would increase in response to greater herd sizes in the remaining five operation types. Changes in long-term variable costs would range from $460 for large cattle summer operations to $16,439 for large sheep operations. The general increase in operation size under this alternative would lead to an average additional hired farm labor requirement of 144 hours in the short term and 177 hours in the long term.

Impacts to the Region and its Communities

This alternative would result in an increase in agriculturally related expenditures of approximately $273,407 in the short term and $323,593 in the long term. Increased expenditures in the agricultural sector would strengthen agricultural support industries within and adjacent to the planning unit. The effect of these increases in ranching expenditures on the region-wide economy would be slight, representing only 0.2 percent of the combined gross taxable sales of Beaver and Iron Counties in the short and long term. These percentages are based on the assumption of no increase in gross taxable sales over the 20-year planning horizon (gross taxable sales are projected from the first three quarters of 1981; Five County Association of Governments, 1982).

The general increase in the sizes of ranching operations under this alternative would require additional hired farm labor. Approximately four full-time jobs would be created in the short term and five jobs in the long term.

Summary

Only minor socioeconomic impacts would result under this alternative. Most of these impacts would be in the form of positive benefits to both ranchers and agricultural support industries. Individual ranch operations would see slight increases in net cash income, averaging 17 percent for all Pinyon ranchers in the short term and 23 percent in the long term. The effect of these increases would be a slight increase in the stability of ranching operations and a slight strengthening of agricultural support industries. The overall impact to the regional economy would be very slight.

UNAVOIDABLE ADVERSE IMPACTS

Rangeland developments for wild horses would result in disturbances to 17 acres in the short-term and 3 acres in the long term. No unavoidable adverse impacts to wildlife habitat or wild horses have been identified.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

As a result of the management actions proposed in this alternative, livestock forage production would increase to 77,918 AUMs in the long-term. Gradual declines in wildlife habitat quality would occur in both the short and long term. Wild horse productivity would be increased in both the short and long term.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

No irreversible commitments of resources have been identified. Rangeland developments, disturbing 17 acres of vegetation, would occur in the short term with 3 acres remaining disturbed in the long-term resulting in an irretrievable loss of forage production.

SUMMARY

A decrease in acres in an upward ecological trend, and an increase in acres in static and downward ecological trends would occur as a result of adjusting livestock allocations to surveyed capacity. Adjusting livestock forage allocations to capacity would result in an increase, in the long term, to 78,237 AUMs. Declines in habitat quality would occur on 22, 473 acres of mule deer habitat, 14,187 acres of antelope habitat, and 10,833 acres of elk habitat. Wild horse numbers would be increased to 855 head in the long term.

ALTERNATIVE 5 - LIVESTOCK MAXIMIZATION

Objectives of this Alternative

The objectives of the management actions proposed under this alternative would be to produce the maximum amount of livestock forage that could be produced in the Pinyon Planning Unit by developing all available treatment potential within the planning unit.

There would be significant changes in stocking levels under this alternative. Livestock, wildlife, and wild horse stocking levels would be adjusted from 60,757, 2,663, and 8,345 AUMs respectively to 78,906, 2,663, and 0 respectively in the short term and 209,006, 2,663, and 0 AUMs in the long term. Substantial acreages would receive vegetation treatments. A total of 841,292 acres would be treated yielding an estimated 173,386 AUMs. Numerous facilities would also be installed, including 51 spring developments, 20 wells, 18 reservoirs or catchments, 5 water tanks, 204 water troughs, 325 miles of pipeline, 35 windmills, and 922 miles of fence with 4 cattleguards. The grazing systems that would be proposed are 7 allotments covering over 337,000 acres under rest rotation systems, 60 allotments with nearly 918,000 acres under deferred rotation systems, and 9,600 acres in 6 allotments under continuous seasonal type systems. Intensive monitoring of climate, vegetation trend, and utilization would be implemented unit-wide.

ENVIRONMENTAL CONSEQUENCES

IMPACTS TO VEGETATION

Significant Management Actions and Change Agents

The most significant actions affecting vegetation under this alternative would result from a total of 841,292 acres of vegetation treatments. Of these, 836,307 acres are assumed to be likely to succeed, but 4,985 would probably be marginal due to the severe slope class on which they occur. However, for analysis purposes it is assumed that onsite soils and vegetation investigations would be conducted prior to any treatments thereby minimizing the chance of treatment failures. Additional change agents that would affect vegetation would be the implementation of new intensive grazing systems on 40 allotments, removal of all wild horses, and construction of extensive range developments and management facilities (325 miles of pipeline, 204 watering troughs, 20 wells, 51 spring developments, 18 reservoirs, and 922 miles of fence).

Ecological Condition

All ecological condition classes would experience a reduction in total acres except the medium ecological condition class which would show a 37 percent increase. The changes in condition classes would be a result of replacing many existing native species with non-native forage species through vegetation treatments. Little change would be expected on the remaining untreated native range sites.

The ecological trend expected in the long term for the planning unit would be as follows:

Ecological Condition	Current Acres	Long-Term Acres
Climax	28,805	5,252
High	369,507	109,265
Medium	663,394	1,053,587
Low	187,715	81,317
Unclassified	14,829	14,829
Total	1,264,250	1,264,250

Ecological Trend

Although some improvement in vigor of desirable native forage species would occur due to the implementation of grazing systems on 40 allotment, 32 of which are currently grazed during the critical spring growing season, the greatest impact to existing ecological trend would result from the 841,292 acres of vegetation treatments. This would occur because vegetation currently on the site would, in most cases, be replaced by a predetermined mix of predominantly non-native species.

Treatment of most sites currently in an upward or downward trend would result in them moving to a static trend as follows:

Ecological Trend	Current Acres	Long-Term Acres
Up	129,246	57,807
Down	194,212	124,828
Static	925,381	1,066,204
Unclassified	15,411	15,411
Total	1,264,250	1,264,250

Summary

Ecological conditions and trend would be affected most significantly by the proposed vegetation treatments. There would be a significant increase in the acres of rangeland in a static ecological trend while all other trend classes would show a net loss. Acres in medium ecological condition class would increase while all other condition classes would show a reduction in acres.

IMPACTS TO LIVESTOCK

Significant Management Actions and Change Agents

The most significant actions affecting livestock forage production under this alternative would result from a total of 841,292 acres of vegetation treatments. For analysis purposes it is assumed that onsite soils and vegetation investigations would be conducted prior to any treatments thereby minimizing the chance of treatment failures. Additional change agents that would affect livestock forage production would be the implementation of new intensive grazing systems on 40 allotments, removal of all wild horses, and construction of extensive range developments and management facilities (325 miles of pipeline, 204 watering troughs, 20 wells, 51 spring developments, 18 reservoirs, and 922 miles of fence).

Available Livestock Forage Production

Removal of all wild horses would result in an increase in available livestock forage production in the short term from 75,990 to 78,906 AUMs.

Vegetation treatments would remove native range from 841,292 Federal acres (currently producing 54,725 AUMs) replacing it with non-native species. In the long term the remaining 422,958 acres of untreated native range (estimated to be currently producing 24,154 AUMs of livestock forage) would, through natural improvement of forage species, be expected to produce an additional 11,466 AUMs of livestock forage. This increase in production would, in many cases, result from the implementation of 40 new grazing systems providing periodic rest from livestock grazing.

Although an estimated 54,724 AUMs of native forage would be lost due to treatments, treated sites would produce 173,386 AUMs of forage, a 217-percent increase in forage production.

Anticipated livestock forage production under this alternative would be as shown in Table 4-16.

Table 4-16

Livestock Forage Production - Alternative 5

	Survey AUMs	Short Term AUMs	Long Term AUMs
Single Use Livestock Forage (Competitive & Noncompetitive)	79,319	79,319	[a]24,567
Competitive Wild Horse Forage	-2,916	......	......
Competitive Wildlife Forage	-413	-413	-413
Available Livestock Forage	75,990	78,906	24,154
Management			11,466
Treatment			173,386
Total Available Livestock			209,006

[a] Production from remaining untreated native range only.

Allocation of livestock forage in the Pinyon P.U. under this alternative would be as summarized below:

	Active Preference	Total Preference	Average Actual Use	Surveyed[a] Production	Short-[a] Term Production	Short-Term Allocation	Long-[a] Term Production	Long-Term Allocation
Livestock	86,121	105,433	60,757	75,990	75,990	60,757	88,583	60,757

[a]This number is constrained by wildlife and wild horse forage needs.

Summary

A significant increase in available livestock forage production (from 75,990 AUMs to 209,006 AUMs) would occur as a result of treatments, new grazing systems, and removal of wild horses in this alternative.

IMPACTS TO WILDLIFE HABITAT

Increasing the number of livestock, implementing grazing systems, developing range projects (especially 900 miles of livestock management fences and 841,292 acres of vegetation treatments), and eliminating wild horses are specific management actions which would cause direct changes to the vegetation. While plant diversity would be increased, vast acreages of treatments and fences would dramatically alter areas used by wildlife. Forage would be allocated for 1,286 mule deer, 600 antelope, and 54 elk or current numbers only. Mule deer would be allocated 1,591 AUMs, antelope 755 AUMs, and elk 317 AUMs. The analysis of changes in vegetation and livestock management that would affect wildlife habitat is discussed below.

Wildlife Habitat Condition

Mule Deer

Increased livestock stocking levels, implementation of grazing systems, construction of 878 miles of fence, and 615,362 acres of vegetation treatments in mule deer habitat would result in declines in the quality of 16,010 acres of summer range, 172,168 acres of winter range, and 55,148 acres of yearlong mule deer habitat. Long-term changes in mule deer habitat would occur as shown in Table 4-17.

Table 4-17

Mule Deer Habitat Condition - Alternative 5

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	25,295	16,649	8,646
	Fair	24,703	17,339	7,364
	Poor	17,196	33,206	.....
		67,194	67,194	16,010
Winter	Good	59,444	28,306	31,138
	Fair	236,977	95,947	141,030
	Poor	216,203	388,371	....
		512,624	512,624	172,168
Yearlong	Good	32,705	9,725	22,980
	Fair	85,175	53,007	32,168
	Poor	131,743	186,891	......
		249,623	249,623	55,148

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

Treatment of 615,362 acres would have the largest impact on mule deer habitat with 74 percent of mule deer habitat being treated. Treatments on this scale would convert large areas used for cover by mule deer into grasslands, making large areas unusable. While 281 water developments would be constructed in mule deer habitat, little benefit to mule deer would result due to habitat being lost due to treatments.

Increasing livestock numbers would result in the 39 special use areas and 117 acres of riparian habitat used by mule deer, to remain in poor to fair condition. The construction of 878 miles of fence in mule deer habitat would result in disturbances during construction, would restrict mule deer movement, and some loss due to entanglement would occur.

Forage allocations to mule deer would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
1,286	1,591	1,286	1,591	1,286	1,591

[a] Allocations of forage based on current demands.

Antelope

The implementation of grazing systems, increased stocking levels, vegetation treatments on antelope habitat (439,191 acres) and the construction of 815 miles of fence would cause significant changes in antelope habitat. Habitat quality would deteriorate on 113,595 acres of yearlong antelope range. Changes in antelope habitat condition would occur as follows:

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Yearlong	Good	70,637	33,830	36,807
	Fair	252,796	176,008	76,788
	Poor	300,024	413,619	......
		623,457	623,457	113,595

The construction of 815 miles of fence in antelope habitat would have adverse impacts on antelope movements by restricting their movements.

The construction of 239 additional water sources would encourage better distribution. However, the large areas of antelope habitat to be treated (70 percent of antelope habitat) would result in these areas being unfavorable for antelope on a yearlong basis.

Forage allocations to antelope would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
600	755	600	755	600	755

[a] Allocations of forage based on current demands.

Elk

The implementation of grazing systems, increases in livestock stocking levels, removal of wild horses, vegetation treatments on 51,713 acres of elk habitat and the construction of 174 miles of livestock management fences, are management action which would affect elk habitat. Implementation of this alternative would result in declines in 3,521 acres of summer range and 9,379 acres of yearlong elk range. Little change would be expected in elk winter range. Change in elk habitat would be as indicated in Table 4-18.

Table 4-18

Elk Habitat Condition - Alternative 5

	Habitat Condition	Current Acres	Long Term Acres	Acres[a] Changing Habitat Condition Class
Summer	Good	1,636	1,331	305
	Fair	6,242	3,026	3,216
	Poor	5,753	9,274	.....
		13,631	13,631	3,521
Winter	Good	1,663	1,663	.....
	Fair	5,597	5,597	.....
	Poor	16,844	16,844	.....
		24,104	24,104	
Yearlong	Good	9,379	0	9,379
	Fair	9,440	16,283	.....
	Poor	11,838	14,374	.....
		30,657	30,657	9,379

[a] Habitat condition information was collected during the 1979-80 SVIM inventory (see Chapter 3, Wildlife).

The construction of 174 miles of fence in elk habitat would disrupt their movements and some losses due to fence entanglement would be expected.

Increased livestock use would result in four seeps, springs, and 89 acres of riparian areas used by elk remaining in poor to fair condition.

The development of 67 water developments would encourage better elk distribution. However, over 75 percent of the present elk habitat would be treated. Treatments of this scale would result in little cover remaining.

Forage allocations to elk would occur as follows:

Current Needs		Short Term[a]		Long Term[a]	
Numbers	AUMs	Numbers	AUMs	Numbers	AUMs
54	317	54	317	54	317

[a] Allocations of forage based on current demands.

Sage Grouse

Vegetation treatments on 62,463 acres of sage grouse habitat would result in the loss of approximately 95 percent of the current sage grouse yearlong habitat. All seven strutting grounds would be abandoned due to the modifications associated with treatments. Since these areas have been shown to be the center of year-round activity and necessary for reproduction and nesting (Wallestad and Pyrah, 1974), it is anticipated that this significant loss in habitat would result in reductions and possibly the loss of sage grouse populations.

Threatened and Endangered Species

The bald eagle, the peregrine falcon, and the Utah prairie dog are the only Federally listed species in the area. No adverse impacts to bald eagles and peregrine falcons or their prey base would be anticipated. Utah prairie dogs would not be affected and, in some cases, areas suitable for future transplants may be created by the proposed vegetation treatments.

Summary

Because of the large acreages of treatments and the construction of approximately 900 miles of livestock management fence declines in habitat quality would occur on 243,326 acres of mule deer, 113,595 acres of antelope, and 12,900 acres of elk habitat.

Treatments occurring on or near sage grouse strutting grounds would result in declines in sage grouse habitat and their numbers.

IMPACTS TO WILD HORSES

Significant Management Actions and Change Agents

This alternative proposes that all wild horses be removed from the Pinyon Planning Unit. This would result in the removal of 552 horses or 9 wild horse herds.

Summary

A total of 552 wild horses would be lost.

IMPACTS TO SOCIOECONOMICS

Significant Management Actions and Change Agents

The most significant management action affecting socioeconomics under this alternative would be 841,292 acres of vegetation treatments. The implementation of intensive grazing systems on 40 allotments, removal of all wild horses, and construction of extensive range and water developments would be less significant management actions. The combined effect of these actions would be a 312-percent long-term increase in forage allocated to wildlife.

Impacts to Ranching Operations

The following analysis is based upon figures presented in table 4-19 Alternative 5 found at the end of this chapter.

In the short term all operation types, except large cattle summer, would receive an increase in forage allocation. In response to this increase in forage, operations would increase herd size. The greatest percentage increase (25 percent) in short-term herd size would occur in large cattle yearlong operations, which would increase size from 165 cows to 206. All operation types would increase herd size in the long term in response to the 312 percent increase in allocated livestock forage. This increase would range from 25 cows to 389 cows for cattle operations and from 368 ewes to 1,597 ewes for sheep operations.

Net cash income would increase an average of 21 percent for the six operation types receiving increases in forage allocation in the short term. Large cattle summer operations would experience a 16-percent reduction in forage allocation in the short term and would see a corresponding 11 percent, or $2,987, decrease in net cash income. In the long term all operation types would experience an increase in net cash income. These increases would range from $9,566 for small cattle fall-winter-spring operations to $95,084 for large cattle yearlong operations. The overall average increase in long-term net cash income would be 292 percent. Variable costs would increase in response to increased herd size. The required long-term increase in these expenditures would range from $625 per year for small cattle fall-winter-spring operations to $74,933 per year for large sheep operations. Increased operation size would lead to an average additional per ranch hired farm labor requirement of 140 hours in the short term and 1,127 hours in the long term.

Impacts to the Region and its Communities

This alternative would result in a regional increase in direct agriculturally related expenditures of approximately $276,672 in the short term and $2,143,817 in the long term. Increased expenditures in the agricultural sector would strengthen agricultural support industries within and adjacent to the planning unit. The effect of these increases in ranching expenditures on the region-wide economy would be slight in the short term only 0.2 percent of the combined gross taxable sales of Beaver and Iron Counties; slightly more significant in the long term, representing 1.5 percent of the region's gross taxable sales. These percentages are based on the assumption of no increase in gross taxable sales over the 20-year planning horizon (gross taxable sales are projected from the first three quarters of 1981; Five County Association of Governments, 1982).

The general increase in the sizes of ranching operations under this alternative would require additional hired farm labor. Approximately four full-time jobs would be created in the short term and 33 jobs in the long term. In the long term, this alternative would increase farm wage and salary employment of the region by 11 percent based upon 1979 BEA employment figures (U.S. Department of Commerce, 1981).

Summary

Only minor socioeconomic impacts would result under this alternative. Most of these impacts would be in the form of positive benefits to both ranchers and agricultural support industries. Individual ranch operations would see significant increases in net cash income, averaging 20 percent for all Pinyon ranchers in the short term and 292 percent in the long term. The effect of these increases would be a great increase in the stability of ranching operations, strengthening of agricultural support industries, and a significant increase in farm labor employement. The overall impact to the regional economy would generally be slight, but an increase in the economic activity of agricultural support sectors and farm labor employment would be noticeable.

UNAVOIDABLE ADVERSE IMPACTS

Rangeland developments would disturb 1,324 acres of vegetation in the short term and 26 acres in the long term. The loss of sage grouse strutting grounds and wildlife habitat due to large acreages of treatments and the construction of 900 miles of fence would be considered unavoidable adverse impacts. The removal of all 552 wild horses would be unavoidable.

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

As a result of vegetation treatments and grazing systems, available livestock forage would be expected to increase in the long term to 209,006 AUMs. Gradual declines in habitat for game species would occur in the short term and continue into the long term.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Disturbance to vegetation and subsequent loss of production would occur on 1,324 acres in the short term and 26 acres in the long term. Vegetation treatments would result in a loss of production on 841,292 acres until sites were revegetated. Irretrievable losses of big game would occur due to increased fencing, and disturbance of strutting ground would result in the loss of sage grouse populations.

SUMMARY

Livestock forage production would be increased to 209,006 AUMs. There would be an increase in the acres of rangeland in a static ecological trend while all other trend classes would show a net loss. Acres in medium ecological condition class would increase while all other condition classes would show a reduction in acres. Declines in habitat quality would occur on 243,326 acres of mule deer, 113,595 acres of antelope, and 12,900 acres of elk habitat. Treatments on or near sage grouse strutting ground would result in declines in their habitat and numbers. Ranch operations would see net cash income averaging 20 percent in the short term and 292 percent in the long term.

Table 4-19

LIVESTOCK OPERATION TYPES

		Cattle Small Summer (11)					Cattle Small FAWISP* (3)					Cattle Large Summer (3)					Cattle Large FAWISP* (7)					Cattle Large Yearlong (17)				
		Baseline	Short Term		Long Term		Baseline	Short Term		Long Term		Baseline	Short Term		Long Term		Baseline	Short Term		Long Term		Baseline	Short Term		Long Term	
		Total	Total	%	Total	%	Total	Total	%	Total	%	Total	Total	%	Total	%	Total	Total	%	Total	%	Total	Total	%	Total	%
Alt. 1	Continuation of Present Management																									
	Net Cash Income	2,263	2,263	0	2,263	0	6,334	6,334	0	6,334	0	26,487	26,487	0	26,487	0	38,522	38,522	0	38,522	0	23,716	23,716	0	23,716	0
	Variable Costs	6,249	6,249	0	6,249	0	8,200	8,200	0	8,200	0	40,237	40,237	0	40,237	0	59,247	59,247	0	59,247	0	29,682	29,682	0	29,682	0
	Herd Size (Cows or Ewes)	29	29	0	29	0	41	41	0	41	0	189	189	0	189	0	276	276	0	276	0	165	165	0	165	0
	Hired Farm Labor Hours	119	119	0	119	0	169	169	0	169	0	777	777	0	777	0	1,185	1,185	0	1,185	0	678	678	0	678	0
Alt. 2	Planning Recommendation																									
	Net Cash Income	2,263	2,058	-9	2,896	28	6,334	6,334	0	6,334	0	26,487	26,050	-2	38,845	-4	38,522	36,845	-4	41,628	8	23,716	24,363	3	42,286	78
	Variable Costs	6,249	5,944	-5	7,191	15	8,200	8,200	0	8,200	0	40,237	40,085	0	58,604	-1	59,247	58,604	-1	60,439	2	29,682	29,958	1	37,605	27
	Herd Size (Cows or Ewes)	29	29	-3	32	10	41	41	0	41	0	189	187	1	269	-3	276	269	-3	288	4	165	168	2	247	50
	Hired Farm Labor Hours	119	115	-3	144	21	169	169	0	169	0	777	770	-1	1,157	-2	1,185	1,157	-2	1,290	9	678	690	2	1,012	49
Alt. 3	Livestock Grazing Preference																									
	Net Cash Income	2,263	2,850	26	3,750	66	6,334	8,230	30	9,470	50	26,487	20,026	-24	30,700	16	38,522	39,500	3	48,700	26	23,716	34,050	44	59,750	152
	Variable Costs	6,249	6,549	5	7,024	12	8,200	8,453	3	8,617	5	40,237	37,997	-6	41,653	4	59,247	59,602	1	62,640	6	29,682	33,837	14	44,167	49
	Herd Size (Cows or Ewes)	29	32	10	37	28	41	46	12	49	20	189	164	-13	204	8	276	280	1	314	14	165	207	25	312	89
	Hired Farm Labor Hours	119	132	11	152	28	169	189	12	202	20	777	675	-13	843	8	1,185	1,203	2	1,354	14	678	864	27	1,325	95
Alt. 4-1	Resident Resource Values - Wildlife																									
	Net Cash Income	2,263	2,120	-6	5,040	123	6,334	7,800	23	10,620	68	26,487	30,560	15	36,175	37	38,522	39,175	2	48,100	25	23,716	33,500	41	49,900	110
	Variable Costs	6,249	6,179	-1	7,702	23	8,200	8,205	0	8,214	0	40,237	41,577	3	43,444	8	59,247	59,490	0	62,423	5	29,682	33,600	13	40,249	36
	Herd Size (Cows or Ewes)	29	28	-3	43	48	41	45	10	52	27	189	204	8	224	19	276	279	1	311	13	165	204	24	272	65
	Hired Farm Labor Hours	119	116	-3	180	51	169	200	18	214	27	777	840	8	927	19	1,185	1,197	1	1,345	14	678	853	26	1,150	70
Alt. 4-2	Resident Resource Values - Wild Horses																									
	Net Cash Income	2,263	1,888	-17	2,135	-6	6,334	8,990	42	9,020	42	26,487	22,314	-16	25,161	-5	38,522	39,850	3	41,150	7	23,716	33,750	42	35,500	50
	Variable Costs	6,249	6,066	-3	6,187	-1	8,200	8,377	2	8,379	2	40,237	38,790	-4	39,777	-1	59,247	59,721	1	60,136	2	29,682	33,719	14	34,431	16
	Herd Size (Cows or Ewes)	29	27	-7	28	-3	41	48	17	48	17	189	173	-8	184	-3	276	281	2	286	4	165	206	25	213	29
	Hired Farm Labor Hours	119	111	-7	116	-3	169	197	17	197	17	777	711	-8	257	-3	1,185	1,209	2	1,230	4	678	858	27	890	31
Alt. 5	Livestock Maximization																									
	Net Cash Income	2,263	2,320	3	16,000	607	6,334	7,780	23	15,900	151	26,487	23,500	-11	66,800	152	38,522	41,300	7	76,800	99	23,716	33,700	42	118,800	401
	Variable Costs	6,249	6,323	1	25,981	316	8,200	8,297	1	8,825	8	40,237	39,186	-3	54,208	35	59,247	60,330	2	73,944	25	29,682	33,951	14	70,241	137
	Herd Size (Cows or Ewes)	29	29	0	94	224	41	45	10	66	61	189	177	-6	337	78	276	287	4	420	52	165	206	25	554	236
	Hired Farm Labor Hours	119	120	1	400	236	169	184	9	268	59	777	729	-6	1,413	82	1,185	1,233	4	1,829	54	678	858	27	2,390	253

*FAWISP = Fall-Winter-Spring

(1981 Dollars)

Table 4-19 concluded

	Sheep Small (3)					Sheep Large (15)				
	Baseline	Short Term		Long Term		Baseline	Short Term		Long Term	
	Total	Total	%	Total	%	Total	Total	%	Total	%
Continuation of Present Management										
Net Cash Income	13,124	13,124	0	13,124	0	88,803	88,803	0	88,803	0
Variable Costs	4,870	4,870	0	4,870	0	34,774	34,774	0	34,774	0
Herd Size (Cows or Ewes)	171	171	0	171	0	1,249	1,249	0	1,249	0
Hired Farm Labor Hours	100	100	0	100	0	1,325	1,325	0	1,325	0
Planning Recommendation										
Net Cash Income	13,124	15,234	16	28,797	119	88,803	97,934	10	123,693	39
Variable Costs	4,870	6,299	29	15,483	218	34,774	42,194	21	63,123	82
Herd Size (Cows or Ewes)	171	205	20	421	146	1,249	1,416	13	1,888	51
Hired Farm Labor Hours	100	120	20	245	145	1,325	1,502	13	2,003	51
Livestock Grazing Preference										
Net Cash Income	13,124	15,300	17	29,100	122	88,803	104,100	17	127,000	43
Variable Costs	4,870	6,156	26	14,104	190	34,774	46,597	34	65,027	87
Herd Size (Cows or Ewes)	171	204	19	406	130	1,249	1,516	21	1,933	55
Hired Farm Labor Hours	100	120	20	247	147	1,325	1,625	23	2,093	58
Resident Resource Values - Wildlife										
Net Cash Income	13,124	15,200	16	28,950	121	88,803	95,600	8	125,600	41
Variable Costs	4,870	6,322	30	15,540	219	34,774	40,067	15	62,878	81
Herd Size (Cows or Ewes)	171	202	18	401	135	1,249	1,369	10	1,885	51
Hired Farm Labor Hours	100	120	20	246	14	1,325	1,457	10	2,040	54
Resident Resource Values - Wild Horses										
Net Cash Income	13,124	15,130	15	15,130	15	88,803	107,200	21	111,000	25
Variable Costs	4,870	6,230	28	6,230	28	34,774	49,031	41	51,213	47
Herd Size (Cows or Ewes)	171	203	19	203	19	1,249	1,572	26	1,634	31
Hired Farm Labor Hours	100	119	19	119	19	1,325	1,687	26	1,758	33
Livestock Maximization										
Net Cash Income	13,124	15,300	17	38,200	191	88,803	105,600	19	181,000	104
Variable Costs	4,870	6,367	31	21,878	349	34,774	48,432	39	109,707	215
Herd Size (Cows or Ewes)	171	203	19	539	215	1,249	1,540	23	2,846	108
Hired Farm Labor Hours	100	120	20	333	233	1,325	1,652	25	3,117	135

LIST OF PREPARERS

PREPARATION OF PLANNING DOCUMENTS

Name and Title	Assignment	Education	Federal Experience
EIS			
Arlen Jensen, Area Manager			
Jay K. Carlson, Supervisory Env. Specialist	Team Leader	BS Resource Mgt. MS Economics	5 yrs
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Mark W. Stiles, Regional Economist	Core Team Writer/Analyst Socioeconomics	BS Wildlife Mgt. MS Economics	1 yr
Ron Tucker, Wildlife Biologist	Core Team Writer/Analyst Wildlife - Wild Horses	BS Wildlife Mgt. MS Range Animal Science	4 yrs

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Review Coordinator

H. Fairchild,
Editor

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LIST OF AGENCIES, ORGANIZATION, AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

Special Interest Groups

Ada County Fish & Game League

American Farm Bureau Federation

American Fisheries Society

American Horse Protection Assoc.

Beaver County Cattlemen's Assoc.

Cattlemen's Association

Cedar City Wildlife Federation

Council on Utah Resources

Defenders of the Outdoor Heritage

Defenders of Wildlife

Desert Bighorn Council

Enchanted Wilderness Society

Environmental Action

Environmental Defense Fund

Farmer's Home Administration

Friends of the Earth

Good Earth

Humane Society

Iron County Cattlemen's Association

Isaac Walton League

ISSUE

National Audobon Society

National Council of Public Land Users

National Farm Bureau

National Mustang Association

National Outdoor Coalition

National Parks & Conservation

National Wild Horse Association

National Wildlife Federation

Natural Resources Defense Council

Natural Conservancy

Pro-Utah, Inc.

Public Lands Council

Rocky Mountain Center for Environment

Sierra Club

The Society for Range Management

Trout Unlimited, Utah Council

Utah Archaeological Society

Utah Audobon Society

Utah Cattlemen's Association

Utah Farm Bureau Federation

Utah Mining Assoc.

Utah Nature Study Society

Utah Sportmen's Association

Utah Wildlife and Outdoor Recreation Federation

Utah Woolgrower's Assoc.

Washington County Cattlemen's Assoc.

WHOA

Wilderness Society

Wildlife Society

Women's Conservation Council of Utah

Local Governments, Commissions, and Associations

Beaver County Commission

Iron County Commission

Millard County Commission

Washington County Commission

Mayor Robert O. Christiansen

Mayor Dale T. Eyre

Mayor Worth Grimshaw

Mayor Lyle Jones

Mayor John C. Pendleton

Mayor Lee R. Petty

Five County Assoc. of Governments

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Utah Division of Parks and Recreation

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Utah Division of Water Resources

Utah Division of Wildlife Resources

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Utah State Cooperative Extension Service

Utah State Historic Preservation Officer

Utah State Planning Office

Utah Water Rights Division

Utah Congressional Delegation

Hon. Dan Marriott

Hon. Robert Hansen

Hon. Jake Garn

Hon. Orrin Hatch

Federal Agencies

Advisory Council on Historic Preservation

U.S. Department of Agriculture
Forest Service

Shrub Sciences Laboratory

Forest Supervisor, Dixie N.F.

Soil Conservation Service

Army Corps of Engineers

Environmental Protection Agency
Environmental Evaluation Branch

National Park Service

Office of the Solicitor

U.S. Fish and Wildlife Service

U.S. Geological Survey

Bureau of Reclamation

BLM, Nevada State Office

BLM, Las Vegas District

BLM, Ely District

BLM, Richfield District

Permittees

LeRoy Adams
David Albrecht
Douglas Albrecht
Russell Albrecht
Leon and Bradley Bowler
Sherwood Bracken
Cannon Livestock Co.
Max and Ruth Cannon
Dean and Lyle Carter
Reed Carter
Richard Christiansen
Richard Clissold
Rulon and Thurman Eyre
Richard Flinspach
Gurney Land and Livestock
Jess Guymon
Hart Brothers
Harold Hatch
Howard Hatch
James Hatch
Thomas Hatch
Alma Holt
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Lyle Jones
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Sherwood and Son
Doyle and Don Sly
Jack Smith
Southern Utah State College
LeRoy Speirs
D. Ray Tebbs
Fenton Terry
Herbert Twitchell
LeGrande Webster
Wintch Livestock Co.
Cleo Wood
Lehi Wood
Lister Wood
William and Noel Wood
Michael Yardley

APPENDIX 1

Inventory Procedures Used for the Pinyon Planning Unit

This appendix contains a brief overview of the general procedures that were employed to conduct the SVIM inventory of the Pinyon P.U. While the discussion is not intended to fully explain all the details of a SVIM inventory effort, it should provide the reader with a rudimentary understanding of the basic steps necessary for the collection of field data during the inventory and some of the uses of the information collected.

The March 1, 1978 SVIM manual was used as the basic guiding document for the inventory. A soil survey was not completed on the area prior to the vegetation inventory, and this required several changes in procedures. It was necessary to gather soils and vegetation information at the same time. There were not enough soil scientists to work with each vegetation crew, which required the vegetation crews in some cases to move out ahead, before soils information had been gathered.

Field Inventory Procedures

The inventory area was divided into four separate areas. An experienced permanent or WAE employee was assigned as a crew leader. Each crew consisted of at lease four persons, the crew leader who did the mapping, a two-person vegetation transect crew, and a wildlife biologist. A soil scientist worked with two crews and rotated between them.

Mapping

The crew leader was responsible for mapping, with assistance from the wildlife biologist and soil scientist. Each allotment was mapped into site write-up areas (SWAs) and range sites prior to the transect crew running transects. Because there were insufficient personnel to have a soil scientist to work with each crew it was necessary in many cases to only map site write-up areas, and with the help of the soil scientist place the site write-up areas into range sites at a later date. Site write-up areas were mainly delineated by present vegetation types and subtypes or major condition changes. Site write-up areas were broken on allotment lines, topography changes, condition changes, or wildlife use area changes. It was not necessary for the wildlife biologist to work with the mapper at all times and the need was determined in the field between the crew leader and the wildlife biologist.

Mapping was done on aerial photographs. The allotment lines, the range site, site write-up lines, cultural features, topographic features, and existing improvements were all shown on the photo. The site write-up number and vegetation type of subtype were placed on the photo by the mapper. Each of the four areas was assigned a letter A, B, C, or D. Within each area, site write-up areas were numbered consecutively. Vegetation types or subtypes were shown on the photo as aspect plant, dominant plant, and most important plant. These designations are shown by the standard four letter symbols.

In order to transfer the information from the photos to topographic maps it was necessary to have ground control established on the photos. Where possible, a minimum of two section corners per photo were located and pricked on the photos.

Vegetation Transect Procedures

A write up was made in each site write-up area. On similar vegetation types at least one transect was run for each five site write-up areas. In the SWAs on which a transect was not run, the total grams per plant species were estimated for the equivalent of 10 plots. This estimate was adjusted by comparing the site write-up area to a site write-up area where a transect was run.

A toe-pace transect was run in each SWA to get cover information. On the SWAs where a transect was run and plants were clipped and weighted or estimated, the transect was at least 200 paces long and the information was recorded on a special SVIM form.

Additional Information Collected

a. Apparent trend, slope, aspect, opportunities, range site name, vegetation, type, treatment type.

b. Soil surface factor.

c. Sediment yield factor rating.

On SWAs where a transect was run two characterization plots were completed. Grasses were characterized within the 9.60 square foot plot ring, shrubs within a 1/200th acre plot which has an 8.3 foot radius, and trees within a 1/100 acre plot which has 11.7 foot radius. Grasses were recorded by form and age class by species and average height, shrubs and trees by average height, average crown diameter, age class and form class. Within the plot the first five plants of each species were characterized, then the remainder of the plants of each species were counted and recorded.

Pinyon-juniper trees presented a special problem for estimating weights. When in tree sites it was necessary to do a minimum of two 1/100 acre characterization plots. To estimate tree weights, field personnel estimated the height and crown diameter of all trees within the 11.7 foot radius plot, recorded the number of trees within the plot for each of the two plots, and then averaged the crown diameter within the two plots. Personnel then estimated whether the average trees had dense, medium, or sparse foliage. After determining the appropriate range site, employees then looked up the weight per tree in the SCS table, multiplied the average number of trees from the two plots by the weight of the tree, and multiplied the total weight by 100 to obtain the pounds per acre. It was then necessary to apportion this weight into the different height classes to determine how much was available for use at the different heights: 0-3 feet, 3-4.5 feet, 4.5-7 feet, and above 7 feet.

APPENDIX 2

BLM Planning System and the Pinyon Planning Unit

The following three steps are an integral part of the BLM planning system and were utilized during preparation of the Pinyon plan and EIS.

1. Land and Resource Inventory Data are collected on current resource supply and production, condition, and trend. Data have been collected in the following land use categories: lands, minerals, forest products, range management, watershed, wildlife habitat, and recreation. Additional physical data, including topography, climate, geology, soils, vegetation, erosion condition, hazards, developments, and access have been collected. These inventories were completed and updated in September 1980 for the Pinyon Planning Unit (PU).

2. Unit Resource Analysis (URA): A document containing a summary of the resource inventories and describing the physical profile of the unit. It also describes the present situation with respect to current land uses, production, trends, condition, and problems. In addition, it develops technically feasible projections for potential resource enhancement, improvement, and production capability. This document was prepared in 1981 for the Pinyon area.

3. Management Framework Plan (MFP): The Pinyon MFP is transitional between the new Resource Management Plan (RMP) format and the older MFP format. Issues and management concerns are the focusing points around which the MFP was organized. Issues are forage management, which includes forage allocation, and land treatment and improvements, oil and gas leasing categories, fire management, and rights-of-way corridors. The MFP recommendations were formulated by an interdisciplinary team representing the major resources in the area and economics. The team recommendations were designed to resolve previously identified issues. These recommendations were then given to the Area Manager who made the recommendations that this EIS is analyzing. Following publication of the final environmetnal statement, the District Manager will make the final land use decisions. Upon concurrence by the State Director, a summary of land use decisions will be made available to the public for review.

The portion of the Pinyon plan dealing with range management is based upon the Bureau's new Grazing Management Policy (Washington Office Instruction Memorandum No. 82-292). The policy calls for selective managmeent on allotments or areas sharing similar characteristics. The range management objectives for the Pinyon plan are as follows:

a. On 31 allotments with significant forage resource conflicts, protect and enhance 379,277 acres of suitable, 49,170 acres of limited suitable, 241,793 acres of potentially suitable, and 26,581 acres of unsuitable public rangelands within the context of balanced use and sustained yield. Resolve forage resource conflicts by increasing forage production to total grazing preference. Through intensive grazing management over an appropriate timeframe (approximately 20 years) increase forage production of 31,799 AUMs (present forage production) by 7,783 AUMs to achieve the allotments' natural potential of 39,582 AUMs. Through land treatment projects, increase production by 15,650 AUMs to achieve these allotments total preference of 55,232 AUMs.

b. Maintain and improve 323,754 acres of suitable, 44,533 acres of limited suitable, 131,338 acres of potentially suitable, and 25,278 acres of unsuitable public rangelands that are in satisfactory ecological condition and are being managed satisfactorily.

c. Prevent further deterioration of the range resource by continuing to allow the use presently authorized on 18 allotments containing 58,223 acres of public lands of which 32,251 acres are suitable public rangelands. Allow for uses other than lviestock grazing or for the exchange or sale of isolated tracts of public land in seven of these allotments and on unalloted areas.

These objectives guided the developemnt of the range recommendations which are described in Alternative 2 (Planning Recommendation). For more detailed information on the Pinyon plan, the reader is referred to the Beaver River Resource Area Office, BLM, Cedar City, Utah.

APPENDIX 3

Consolidated List of Issues and Concerns Developed at Planning Workshop and Identified in Pinyon and Wah Wah MFPs

Lands

1. Consolidate land ownership through an exchange program for more effective management of private, public, and State lands. Identified sites include:
    a. The Alunite-State exchange in Wah Wah Valley.
    b. The potato patch exchange near Modena.
    c. The exchange program with FLEX in Escalante Valley and the Needle Range of mountains.

2. Terminate unauthorized dumping, agricultural, and occupancy trespass on public lands. Inventoried sites include:
    a. Escalante Valley REA trespass powerline.
    b. Utah Department of Highways unauthorized highway right-of-way.
    c. Mountain Bell Telephone Company unauthorized right-of-way.
    d. Numerous unauthorized dump grounds.

3. Permit utility lines but keep within existing corridor where possible.

Minerals

1. Do nothing to hinder mineral, oil and gas, or geothermal exploration or development.

2. Establish community pits for the removal of sand, gravel, or fill material. Areas most likely needing community pits are around the communities of Milford and Enterprise.

Forestry

1. Permit harvesting of woodland products. Protect unique species of trees in the resource area - ponderosa pine, white fir, bristlecone pine, Douglas fir, aspen, and cottonwood. Inventoried locations are shown on the overlay.

Range

1. Improve vegetation cover through improved livestock management, land treatment, and water development where justified.

2. Permit changes in class of livestock only where it will benefit the range. Should also consider how it will affect revenue to United States.

3. Improve management of livestock and feral horses through AMPs and WHMPs.

4. Need expressed for increased predator and wild horse control.

Recreation

1. Need for designation of off-road vehicle (ORV) use areas and regulation of ORV use.

2. Concern expressed over wilderness designations on public lands. Some for and some against.

3. Preserve and protect the natural characteristics of open space, scenery, ecological and natural values, and unique geologic areas.

4. Protect significant archaeological and historical sites.

5. Need for hazard reduction to protect the public from mine shafts, tunnels, etc.

Watershed

1. Improve vegetation cover through improved livestock management or revegetation to stailize watershed conditions.

Wildlife

1. Improve vegetation cover to improve feed for wildlife by improved livestock management and revegetation where suitable.

2. Allow predator control only in areas where there is a confirmed need. Take only problem animals, not entire population.

3. Need provision for year-round water at all water developments to provide water for wildlife and wild horses.

4. Powerlines should be constructed or modified to prevent raptor electrocutions.

5. Provide habitat and protection for endangered wildlife species.

General

1. All activities indicated a need for better inventories on which to make recommendations.

Consolidated List of Issues or Concerns Identified in the Buckskin, Mud Springs, Cedar, Beaver, Pinyon, and Wah Wah Management Framework Plans

Lands

1. Consolidate land ownership through an exchange program for more effective management of private, public, and State lands.
2. Terminate unauthorized dumping, agricultural and occupancy trespass on public lands.
3. Permit utility lines but keep within existing corridors where possible.
4. Provide land for community expansion.

Minerals

1. Do nothing to hinder mineral, oil and gas, or geothermal exploration or development.
2. Establish community pits for the removal of sand, gravel, or fill material.

Forestry

1. Permit harvesting of woodland products. Protect unique species in the resource area, e.g., ponderosa pine, white fir, bristlecone pine, Douglas fir, aspen, cottonwood, and hybrid oak.

Range

1. Improve vegetation cover through improved livestock management and land treatment where justified.
2. Permit changes in class of livestock where it will benefit the range.
3. Improve management of livestock and feral horses through AMPs and WHMPs.

Recreation

1. Need for designation of ORV use areas and regulation of ORV use. Identified ORV use area - Three Peaks.
2. Preserve and protect the natural characteristics of open space, scenery, ecological and natural values, and unique geologic areas.
3. Need for some protective designation on Mineral Mountains.
4. Protect significant archaeological and historical sites.
5. Need to make determination if additional recreation facilities or roads are needed at Minersville Reservoir.

6. Need for hazard reduction program to protect the public from mine shafts, tunnels, etc.

Watershed

1. Improve vegetation cover through improved livestock management or revegetation to stabilize watershed conditions.

2. Allow predator control only in areas where there is a confirmed need. Take only problem animals, not entire population.

3. Need provision for year-round water at all water developments to provide water for wildlife and wild horses.

4. Powerlines should be constructed or modified to prevent raptor electrocutions.

5. Determine potential of Quichapa Lake for a migratory waterfowl flyway nesting area. (This may have been accomplished. Note from DWR indicates fear of botulism.)

6. Improve transportation system.

7. Provide habitat and protection for endangered wildlife species.

General

1. All activities indicated a need for better inventories on which to make recommendations.

APPENDIX 4

Planning Issue Criteria - Pinyon Planning Unit

ISSUE 1: FORAGE MANAGEMENT

A. Forage Allocation

1. Allocation to wildlife will not exceed current numbers. UDWR objectives for the area will be honored as forage is available and as range condition merits increased allocation.
   - Allocations for deer will not exceed current number (1,300) with the long-term objective to allow for prior stable numbers (2,470 deer).
   - Allocations for antelope will be for 600 animals with the long-term objective to allow for 1,070 antelope.
   - Allocations for elk will be for 60 animals with the long-term objective to allow for 200 elk.

2. Allocations for wild horses will be limited to the amount of forage necessary to sustain no more than the number of animals estimated to be present in the planning unit at the time of the passage of the Wild Horse and Burro Act and from no more geographic areas than were estimated to be occupied by those animals at that time.
   - Allocations for wild horses will consider herd consolidations.
   - Management options for wild horses will consider herd relocations which will be proposed on the basis of BLM's ability to control and manage herd size(s), herd movements, and the availability of horses for public observation.

3. Each allotment will be categorized in the planning process into one of the following thre categories for mangement of forage allocated to domestic livestock. Allotments will be placed in the categories based on the following criteria:

M - (Management to maintain or improve the existing situation)
Present range condition is satisfactory.
Present management is satisfactory.
Limited land use or resource conflicts.
Allotment is producing near potential or has potential for increased vegetation production through grazing management.

I - (Management with the principal objective to improve existing conditions)
Present range condition is fair to poor.
Grazing management practices are inadequate.
Allotment has potential for increased production through grazing management.

Land use or resource conflicts exist.
Allotment has potential for positive economic return on public investments.

C - (Manage in a custodial manner with the principal short-term objective to prevent deterioration of current resource conditions)
Allotment has low forage productivity.
Allotment has low potential for improvement through grazing management or potential is limited by economic criteria.
Grazing management practices are minimal.
Present range condition is generally poor but stable.

For management actions associated with category designation see Instruction Memo No. CCDO 82-3.

Allocations for livestock will be based on actual use and the grazing inventoried capacity. Initial adjustments will be made based on the following criteria:

- Reductions for an individual operator whose allotment is in the I or C category will not exceed 10 percent of his average actual use or his average licensed use.
- Increases for an individual operator whose allotment is in the M category will not exceed 10 percent of his active grazing preference.
- Subsequent adjustments, increases or reductions, will be based on monitoring studies.

Isolated unmanageable tracts of public land consisting of parts or all of some allotments will be identified and considered for disposal. Size of tracts for consideration will usually be 640 acres or less. Forage will not be allocated in the plan for tracts to be disposed of. Grazing, where appropriate, will be licensed at present levels until disposal.

B. Land treatments and improvements analyzed in the plan and EIS will be limited to I category allotments pursuant to the following policy:

1. Benefit Cost Ratio

All the projects together, which are needed within an allotment to implement management, must have a benefit cost ratio of at least 1:1 unless needed to protect critical resources. An individual project may not have a favorable cost benefit ratio, but a total of all projects within an allotment must have.

2. Priorities for development of projects in each allotment are:

(a) Water developments
(b) Fences
(c) Land treatments

Type of improvements, priority, and constraints:

(a) Water Developments
  (1) Priority
    - The first priority will be in dry areas which are potentially or limited suitable, and will become suitable with the addition of water.
    - The second priority will be for waters to improve management in suitable areas. These would include waters needed to implement grazing systems.
  (2) Constraints
    - Waters will normally not be developed for livestock that water areas that are unsuitable because of slope and/or production.
    - Waters can be developed in unsuitable areas, where it is piped to suitable areas.

(b) Fencing
  (1) Priority
    - Allotment boundary fences should normally be constructed first.
    - Management fences needed for implementation of grazing systems and protection of other resource values.
  (2) Constraints
    - All fences will comply with fence standards in BLM Manual 1737.

(c) Vegetation Treatment
  (1) Priority
    - Areas needing treatment to implement grazing systems or to balance pastures for AMP implementation.
    - Areas needing treatment to restore suspended preference will be second priority.
  (2) Policy
    - The range user's projected grazing capacity after treatment will not exceed total preference for the allotment, unless needed to implement management.
  (3) Constraints
    - Areas estimated to attain 75 percent of natural vegetation potential, through management in 20 years will not be treated.
    - Areas that are treated should have grazing capacity after treatment of at least 10 acres per AUM.
    - Native range will not be treated if naturally they are presently producing 15 acres per AUM or better.
    - Native range will not be treated if the preseng grazing capacity cannot be doubled.

3. Land treatment proposals for wildlife will be to maintain and/or improve important wildlife habitat condition.

Important habitat is defined as those areas where it can be demonstrated they will be used by mule deer, antelope, sage grouse, or elk.

ISSUE 2: OIL AND GAS CATEGORIES

A. All lands in the planning area should be considered in Category 1 - Open Leasing unless:

1. Special stipulations are needed to protect significant resource values (Category 2 - Special stipulations) or,

2. They are high-value lands of limited area where irreversible damage could occur by onsite surface operations but offsite drilling methods make oil and gas production feasible without surface disturbance (Category 3 - No Surface Occupancy) or,

3. They are high-value lands of great area similar to candidate wilderness areas where irreversible damage would occur by onsite surface operations (Category 4 - Suspended or No Lease).

B. Resources on Category 3 and 4 lands must be unique scenic or cultural areas, floodplains and wetlands, unique natural areas in which exist threatened or endangered plant or animal species, or critical wildlife habitat. These are areas where surface disturbances, previous mineral or energy exploration, extensive presence of roads and trails, or other irreversible intrusions on the land surface are minimal.

C. Categories will be determined by an interdisciplinary team using all current guidance and resource information.

ISSUE 3: FIRE MANAGEMENT

Wild fire will be used to improve and maintain desirable vegetation types. Areas will be identified for limited wild fire suppression. Wild fires will be so managed on the unit except on:

- Areas adjacent to concentrations of private or State lands.
- Areas of extensive BLM or other authorized developments or improvements.
- Areas where the resources are identified as not capable of being improved or not capable of being successfully rehabilitated following fires.
- Areas where a vegetation composition change is not desirable.

ISSUE 4: RIGHTS-OF-WAY AND CORRIDORS

A. A right-of-way corridor will be considered for designation along the IPP right-of-way in accordance with the needs identified by the Western Regional Corridor Study.

B. Rights-of-way will not be authorized in:

- Wilderness study areas.
- In areas where oil and gas designation is Category 3 or 4.
- Other areas where rights-of-way should not be allowed because of significant resource values.

C. Unless specifically identified in B above, no other restrictions of rights-of-ways will be made and rights-of-ways would not have to be restricted to the area identified in 1 above. The plan should identify areas to be avoided, then recommend whether the corridor needs to be identified and designated.

APPENDIX 5

Utilization Standards and Intensity of Monitoring Studies Per Allotment

Utilization Standards

1. Up to 50 percent average utilization allowed on desirable plant species when allotment is grazed any time continuously during the growing season prior to seed ripe.

2. Up to 60 percent average utilization allowed on desirable plant species when allotment is grazed:

    a. After seed ripe of desirable species or during dormant period (winter).
    b. Under a deferred rotation system or a rest rotation system with less than three pastures.

3. Up to 70 percent average utilization allowed on desirable plant species when allotment is grazed under intensive management with a rest rotation system containing three pastures or more and system meets soil and plant requirements.

Monitoring

A monitoring program will be implemented or continued on all allotments to ensure that resource objectives are being met. The way this will be carried out in specific detail is shown in Appendix 4. The level and frequency of monitoring is indicated in each of the alternative descriptions. The program will include riparian monitoring, big game habitat condition, livestock actual use, vegetation utilization, ecological condition and trend, and climate.

The sequence for monitoring and stocking adjustments following the Final Rangeland Program Summary will be:

1. First Year: Develop a monitoring program with livestock operators, bring initial stocking to levels indicated by selected alteratnvies. Monitor vegetation, livestock, and big game use and response.

2. Second Year: Evaluate with the livestock operator the results of the first year monitoring. Monitor vegetation, livestock, and big game use and response.

3. Third Year: Evaluate with the livestock operator the results of the first and second year monitoring results. Adjust stocking levels if indicated by monitoring studies and evaluation. Monitor vegetation, livestock, and big game use and response.

4. Fourth Year: Evaluate with the livestock operator the results of the previous three years monitoring results. Continue to stock at the new level. Monitor vegetation, livestock, and big game use and response.

5. Fifth Year: Evaluate with the livestock operators the results of the previous four years of studies and evaluations. Continue to stock at the new level. Examine vegetation, livestock, big game use and response. Consult with other interest groups. Establish a new active preference.

Stocking during the first and third years could be increased or decreased. If the monitoring studies and evaluation support an increase, additional livestock use would be granted. If evaluation indicates a need to decrease, livestock use would be reduced. Adjustments would be temporary until a final evaluation would be completed in the fifth year. After evaluation of all monitoring study data and any other data available after the fifth year a final decision will be made to establish a new active preference.

Intensity of Monitoring Studies

1. Category M Allotments

    a. Conduct utilization studies on key areas every 3 to 5 years.
    b. Conduct trend studies on key areas every 3 to 5 years unless a different sequence is designated in the AMP.

2. Category I Allotments

    a. Conduct utilization studies and delineate utilization patterns annually on all suitable areas of grazed pastures.
    b. Conduct trend studies each year on allotments having intensive grazing systems with rested pastures. Conduct studies on key areas during peak of flowering. For allotments not having an intensive system with a rested pasture, studies should be conducted on the third and fifth years, as a minimum, to correspond with adjustment schedule.

3. Category C Allotments

    a. Utilization and trend studies as needed should be conducted on key areas every 3 to 5 years.

Any of the approved Bureau utilization methods may be used which best apply to a particular allotment.

Minimum requirements for trend studies are photos, diagramming and characterization of key species, and determination of density and cover of key species.

Utah Guidance for Range Studies

4412.2 Rangeland Monitoring Studies are the Bureau's tools used to measure and interpret soil and vegetation changes brought about by management action and/or natural events such as climate. The purpose of this supplement is to provide additional guidance for conducting Utah Rangeland Monitoring Studies, on an interim basis, until BLM Manual 4412.2 is rewritten and implemented. Study examiners should be familiar with basic considerations and procedures set out in the existing Manual 4412.2 as well as this supplement.

.21 Basic Considerations.

A. Objectives of the studies should:

1. Provide procedures for gathering sufficient field data to:

a. Serve as a base for interpreting and evaluating management plans or strategies; including verify or adjust livestock and/or wild ungulate populations after initial stocking rates are set,
b. Offer comparison between present management strategies and site potential,
c. Support other production-oriented studies.

2. Involve a multidiscipline approach to avoid duplication of effort and allow maximum efficiency.

B. Priorities

1. Allotments will receive studies in the following priority:

a. Problem or highly important allotments,
b. Allotments under AMPs or grazing systems,
c. Allotments where management is planned,
d. All remaining allotments.

2. Conducting studies will be as follows:

a. Establish complete set of studies (excluding climate) on allotments according to criteria set out in 4412.21B1 above.
b. Establish climate studies in representative areas or areas where there are data voids to supplement existing weather station data.
c. Conduct studies to provide data necessary to verify or adjust stocking rates for livestock and/or wild ungulate populations, adjust seasons of use for livestock, and evaluate progress in achieving management objectives for vegetation resources.

C. Basic studies will include: actual use, utilization, trend, condition, and climate. Phenology and green weight/dry weight conversion studies will be done as necessary to adjust inventory data, or support studies such as climate/phenology correlation. These studies will be considered the standard. Additional studies (water quality, browse utilization, soil erosion, etc.) may be necessary on crucial key areas.

D. Establishing studies. The key area/key species concept will be used in all range studies.

1. Definition. A key area is a portion of a range (pasture within an allotment) which because of its locations, grazing value, and/or use, serves as an indicative sample of range conditions, trend, or degree of use seasonally. A key area may be considered to be the "pulse" of the range (pasture within an allotment) and guides the management of the entire area of which it is a part.

2. Criteria for Establishment and Study

a. As a standard, basic studies (excluding climate) will be established on key areas in each priority allotment. A final objective is a complete set of studies (excluding climate) on each key area in each pasture of each allotment.
b. Preferably a key area should be established to represent only one vegetation-soil unit such as a site write-up area (SWA) where SVIM mapping has been completed. Where the manager feels that it is desirable to monitor more than one vegetation-soil unit on one key area, all data collected should be kept separate by site.
c. There are at least four consideration points in the planning and implementation process where key area locations should be assessed, as follows:

(1) Use MFP constraints as assessed in allotment planning and as necessary to monitor these special and critical problems. Key areas should be crucial for any or all of the following: watershed, wildlife, range.
(2) Select key areas as necessary to evaluate vegetation responses from the grazing system or use established. These key areas will normally result from fence locations and planned water development (allotment planning phase).
(3) Select key areas, as necessary, following full implementation of an AMP where actual grazing patterns are different than anticipated in the allotment planning stage.

(4) Prior to initiation of any new studies, the study site will be evaluated by the multidiscipline team. The intent should be to establish as few studies as possible yet provide the maximum data for all disciplines. As many of these basic studies as possible should be taken in the same key or crucial key area and at the same time to minimize interpretative error and travel costs. Existing studies which provide valuable data will be retained regardless of type, but may not be read on a regular basis.

d. Key plant species (indicators) of vegetation change) should be determined by a multidiscipline team. This team will be composed of range, wildlife, soils, and watershed specialists. A key species should be abundant on a range in satisfactory condition. Grazing values may be of secondary importance. For example, watershed protection may require the selection of plants as key species that protect the watershed but are not the best forage species.

e. Comparison areas should be established for major sites to document site potential and aid in determining management objectives. (Manual 4412.14D8).

3. Study Files will be established for each key area. A key area location sheet with diagrammatic sketch (illustration 4412-1) will be prepared when studies are established. A key area number will be assigned in accordance with the well-numbering system used in Utah (illustration 4412-2). Since there will seldom, if ever, be more than one key area in a quarter section, it would not be necessary to number beyond the quarter section code.

.22 Study Methods listed below are those recommended for Utah. Specific circumstances may warrant use of other study methods outlined in Manual 4412.2 or other modified study procedures. Alternative study procedures must be approved by the State Director prior to implementation.

A. Actual Use.

1. Frequency. Actual use surveys (such as form 4130-5, illustration 4412-3) from operators will be taken annually at the end of the grazing season or billing year. Livestock (and wildlife) counts can be taken any time as deemed appropriate by the range manager.

2. Documentation

a. The following information will be requested from the livestock operator:

1. Allotment name - pastures grazed,
2. Livestock numbers grazed,
3. Season of use (dates).

b. Animal counts will be documented on form 4113-1 for livestock and form 6602-1 for big game.

B. Utilization

1. Frequency. Data will be collected at the end of each grazing period as soon as possible after each class of animal leaves an allotment or pasture. Where both livestock and wild ungulates use the area simultaneously, it may be necessary to compare use on adjacent non-use pastures or on differential exclosures.

2. Methodology will normally be the key forage plant method. Techniques for estimating utilization are found in Manual 4412.22B7.

a. Photographs of key species can be taken showing the different levels of use on both grasses and shrubs to supplement transect information. Mapping should show utilization patterns according to the standard 20 percent class intervals. Mapping will be done in the field on topographic maps, orthophotoquads or other suitable maps or photos and kept in the allotment file. Where SVIM-type surveys have been completed, utilization patterns will normally follow SWA boundaries since present vegetation communities usuallay represent historic grazing patterns. Use of SWA boundaries makes it much simpler to determine acreage and areas that utilization patterns represent.
b. The following information should be shown in each map delineation: transect location, observed utilization, acreage, the location of water, and other improvements.

C. Trend data will quantify vegetation changes in terms of plant density (number of plants per unit area) by species and plant community composition by age and form class.

1. Establishing sites will use the key area concept outlined in part .21D of this supplement. Existing sites will be reviewed to insure they are well within ecological site boundaries. If a site is determined to be improperly located, the existing photo plots will be retained and a new site selected for additional studies. Further readings and calculations of trend index of existing sites will be at the discretion of the manager.

2. Frequency. Data will be collected the year prior to proposed 3 and 5-year decisions following an ES or RMP and in accordance to the frequency range trend thereafter (illustration 4412-4).

3. Mapping trend study areas will be correctly located on a topographic map or orthophotoquad and made a part of the study area's permanent file.

4. Methodology. Three permanently located plots, located 100 feet apart on line will be used (illustration 4412-5). Under no circumstances will plants be clipped within these study plots.

a. Plot size will normally be a 9.6 square foot hoop nested within an 8.3 foot radius plot (1/200 acre).
b. Alternative size plots such as 3 x 3 or 5 x 5 foot frames or 11.7 foot radius (1/100 acre) may be considered necessary or desirable by the multidiscipline team due to exceptionally sparse or dense vegetation or the presence of existing studies utilizing a particular plot size. If a square plot is used as the nested plot, the corner marker farthest from the photo point would be used as a pivot for the 8.3 or 11.7 foot radius plot.
c. Record plant density and characterization data on form 4412-27(V-2) (illustration 4412-6).

(1) Record administrative data in items (3) through (9).
(2) Record plot sizes in items (10) and (11).
(3) Record plot number 1 in column (13).
(4) Characterize grass and forb species in the nested plot.

(a) Record the first species to be characterized in column (14).
(b) Record average height and average crown diameter of the species (not the individual plant) in columns (19) and (20) respectively.
(c) Record the different combinations of age and form class for that species in columns (21) and (22). Age and form class codes are listed in form 4412-27a - instructions for record type V2.
(d) Count the number of individual plants in each age and form class combination and record on the same line in column (23).

(5) Characterize shrub and tree species in the 8.3 or 11.7 foot radius plot and record in the same manner as for grasses and forbs.
(6) Repeat (4) and (5) for plots 2 and 3.

5. For comparison purposes, the density in plants/acre can be easily calculated for each age and form class for key species and entered on a summary work sheet. The calculation would be: Total number counted in form and age class for three plots x constant for plot size = number of plants/acre. Where:

$$\text{constant for plant size} = \frac{43{,}560 \text{ ft.}^2}{3 \times \text{plot area } (\text{ft}^2)}$$

Typical constants are:

3' x 3' plot $= \frac{43,560}{27} = 1613.3$

9.6 ft.^{2} plot $= \frac{43,560}{28.8} = 1512.5$

5' x 5' plot $= \frac{43,560}{75} = 580.8$

6. Supplemental data may include ground cover and/or soil surface factor (SSF). The need for supplemental data will be determined by the multidisciplinary team and the manager.

    a. Ground cover will be gathered utilizing a 200-point step-point transect and recorded on form 4412-26 (illustration 4412-7) according to procedures in Manual 4412.14D2.
    b. Soil Surface Factor (SSF) data will also be recorded on form 4412-26.

7. Photographs

    a. A general view photograph should be taken from a camera point at the first plot toward the remaining two. A panoramic photo (three overlapping photos) may be used where necessary.
    b. A close up photograph of each nested plot should be taken.
    c. Identify all photos with form 4412-16 (illustration 4412-8) or with just the data and key area number (illustration 4412-9) when using that numbering system described in .21D3.

D. Phenology and Green Weight/Dry Weight Conversion studies are needed to adjust transect data and for special studies such as climate/phenology correlation.

1. Frequency. Data will be collected annuallly during the growing season as needed.
2. Methodology. The methodologies for these studies will be followed as set out in Instruction Memorandum Number UT-81-192 (dated March 27, 1981) regarding phenology studies and green weight/dry weight conversions.

E. Climate data is needed to make a reasonable analysis of climate influences on plant growth as related to "normal" or average years and differentiate between management-caused vegetation changes as opposed to natural occurrences.

1. Selection of sites should be based on the climatic classification scheme used by the Soil Conservation Service (i.e., desert, semi-desert, upland, mountain, and high mountain).
2. Data needs include:

    a. Daily precipitation.
    b. Daily maximum and minimum air temperature.
    c. Daily maximum and minimum soil temperature.
    d. Additional data to improve accuracy of calculations, especially in early study phases include:

        (1) Date of last permanent snow cover.
        (2) Soil moisture at begin growth for selected key species at representative locations then at mid and late growing season.
        (3) Wind speed and duration.

3. Data gathering can be from a number of sources to provide adequate coverage with limited resources.

    a. Livestock operators.
    b. Remote, automatic sensing devices.
    c. Other local and Federal agencies.
    d. Permanent weather stations.

.23 Evaluation of Studies' Data will be in accordance with Manual 4413.

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APPENDIX 6

Summary Standard Design Features and Mitigation Measures

General Specifications	Seedings	Spraying and Burning	Water developments (pipelines) troughs, springs, and wells)	Fences
1. Existing access to project sites will be used wherever possible. Disturbance at all project sites will be held to an absolute minimum.	1. Determine feasibility by examination of physical site factors such as soil texture, climatic factors, slope, exposure, soil depth, and erosion susceptibility before fences, water facilities, or vegetation treatments are developed.	1. Examination of physical site factors prior to action.	1. Actual work in springs and stream beds done by hand where possible. If machinery is needed in these areas, it will be selected to minimize disturbance.	1. Off-road vehicular traffic during construction will be held to a minimum.
2. Disturbed areas will be reseeded as soon as possible with a mixture of grasses, forbs, and shrubs. Native species will be used as much as possible.	2. Seed mixture required, containing grass, forb, and browse species. Seeding prescription will be tailored to each site by BLM resource area specialists.	2. Prescribed fire plan and spraying required that will identify application procedures, environmental conditions where allowed, controls, and coordination responsibilities.	2. After construction of spring head boxes, troughs, pipelines, and well sites, the areas will be cleaned up and refuse removed.	2. Fence posts will be so constructed to blend with surroundings except where visibility is required for safety.
3. Clearing of the project sites will be held to a minimum.	3. After seeding, areas will be rested from livestock use for a least two growing seasons or until perennial forage becomes established.	3. Projects will not exceed State and EPA pollution standards. Application of chemicals will conform to EPA regulations and BLM requirements.	3. Cuts, fills, and excavations will be dressed and seeded to blend with surroundings. Pipelines will be buried with possible.	3. Where fences will cross existing roads either gates or cattleguards will be installed.
4. BLM will conduct intensive field (Class III) inventories of specific areas that would be impacted by implementing activities prior to approval. If historic or cultural properties are identified every	4. After seeding, restrict off-road vehicle use until vegetation becomes established.	4. Configuration and patterns will be in conformance with VRM guidelines.	4. Original water sources will be protected, fenced if required, and an off-stream watering supply will be provided near the site.	4. Gates will be installed along fencelines at regular intervals.

(continued)

Appendix 6 continued

General Specifications	Seedings	Spraying and Burning	Water developments (pipelines) troughs, springs, and wells)	Fences
effort will be made to avoid adverse effects. However, where that is not possible, BLM will consult with the SHPO and Advisory Council on Historic Places in accordance with the Programmatic Memorandum of Agreement by and between the Bureau and Council dated January 14, 1980, which sets forth a procedure for developing appropriate mitigative measures to lessen the effects of adverse impacts.				
5. Threatened and endangered species clearance will be required for all project sites prior to new construction.	5. Seedings will be designed to provide maximum "edge effect" with "islands" of cover in open portions of the seeding.	5. Steep drainages and areas within an estimated 0.25 mile of riparian areas, reservoirs, springs, and livestock water developments, will not be treated. See NOTE below.	5. Size of storage tanks and troughs will be designed to accommodate expected needs of livestock and wildlife using each source.	5. Right-of-way clearance will be held to a minimum. Disturbed areas will be rehabilitated where possible.
6. A supplementary environmental assessment will be prepared to include site specific mitigating measures prior to project construction. This assessment will be site specific and supplement the analysis contained in this EIS.	6. Seedings done in important and critical big game habitat will be seeded with desirable browse species to reach a 40 percent target composition.	6. Timing for spraying will be determined by plant growth and soil moisture. Seedings may or may not follow on a case-by-case basis. Desirable plants in remnant population will determine need.	6. Water will be left at the site for wildlife. Wells will be cased to prevent cave-ins and well sites will be fenced.	6. In big game areas, fences will meet BLM Manual design specifications to accommodate wildlife movement.

NOTE: The actual dimensions of a buffer strip will be determined on-the-ground on a case-by-case basis. This will occur during AMP development.

(continued)

General Specifications	Seedings	Spraying and Burning	Water developments (pipelines) troughs, springs, and wells)	Fences
7. No range developments will be constructed or installed in areas designated as frail watershed.	7. If after 2 years of rest on new seedings less than 60 percent of the desired plant composition is attained, reseed as needed and follow with another 2 years of rest.	7. After determination of which acres will be treated by spraying in each allotment, an environmental assessment will analyze application methods and chemicals to be used on approved Denver Serivce Center list.	7. Storage structures will be designed to provide water for wildlife. Drinking ramps will be installed and heights will not prohibit young wildlife from obtaining water.	7. All fences will be in conformance with VRM guidelines.
8. VRM Class guidelines will be followed in the construction of range developments.	....	8. Burning will be conducted in the fall and on slopes less than 15 percent. In sagebrush, burning will be done after desiccation and prior to seed ripe of the sagebrush. Seeding will follow immediately.	8. Water development will be compatible with visual resource management guidelines.	8. Fences will not be constructed where natural barriers or rocky slopes can be used. This will reduce fencing costs and amount of visual impact.
9. Implementation of any part of an alternative not meeting requirements of Section 603 of FLPMA or the interim management policy would be deferred pending Congressional action on suitability recommendations.	....	9. "Cooperative Sage Grouse Guidelines" developed in conjunction with BLM Tech. Note "Habitat Requirements for Sage Grouse" and the Western State Sage Grouse Committee "Guidelines" will be followed in the course of developing plans for vegetation treatment.	9. Water developments will not be operational until seedings have been determined to be successful.	9. Pastures will not be fenced until sites for seedings are surveyed, seedings are successful, and permanent water is provided.

(continued)

Appendix 6 concluded

General Specifications	Seedings	Spraying and Burning	Water developments (pipelines) troughs, springs, and wells)	Fences
....	....	....	10. Where possible, water for wildlife will be maintained yearlong at established water facilities. Offsite water or access to water will be provided for livestock and wildlife where water sources are fenced for protective purposes.	....

APPENDIX 7

ALLOTMENT CATEGORIZATION

Allotments in the Pinyon PU were placed into three categories based on the following criteria and management actions. Placing of allotments into categories would be done in consultation with permittees and other interested groups.

M - Maintain Management:

Criteria

Present range condition is generally satisfactory.

Present management is generally satisfactory.

Limited land use or resource conflicts.

Multiple allotments under the same operation, placed in satisfactory grazing management systems, will be categorized the same.

Management Actions

Operator assumes management initiative for livestock grazing management. Operator would submit actual use information yearly and participate in monitoring studies. Other interested groups would also be invited to participate in monitoring studies.

Livestock use (numbers, class, season of use) may be authorized under 10 year permit.

After-the-fact billing would be permitted where there is a record covering several years of sufficient detail and accuracy to indicate user cooperation and compliance.

Monitoring will focus on changes of ownership or livestock operations, livestock distribution, actual use, and trend. Authorized nonuse would be monitored.

Range improvements would be financed through private investment and where justified, a 50:50 Bureau matching basis where needed to meet management objectives.

Maintenance of range improvements will generally be the responsiblity of the livestock operator unless otherwise specified in a cooperative agreement.

I - Intensive Management:

Criteria

Present range condition is fair to poor (transitional).

Management practices inadequate.

Allotment has potential for increased production through management.

Land use or resource conflicts exist.

Potential for positive economic return on investment.

Mangement Actions

BLM has management lead.

Variable-level use supervision and monitoring focusing on renewable resources condition and mangement actions. Livestock operator would submit actual use information yearly and participate in monitoring studies. Monitoring will include utilization, actual use, climate, and trend. Other interested groups would also be invited to participate in monitoring studies.

Livestock use adujsted, if needed, to meet multiple-use management objectives.

Ten-year permits with after-the-fact billing may be issued as appropriate. After-the-fact billing would be permitted when there is a record covering several years of sufficient detail and accuracy to indicate use cooperation and compliance.

Range improvements authorized or installed to meet management objectives. Private investment is encouraged.

Maintenance of range improvements will be shared by BLM and livestock operators using the same general policy that presently exists.

C - Custodial Management

Criteria

Allotment generally has low productivity currently.

Allotment generally has low potential for improvement through management.

Management practices are minimum.

Present range condition is poor but stable.

Management Actions

Operator assumes mangement initiative for livestock operations.

Livestock use will generally remain as is.

Livestock use may be authorized under 10-year permit.

Low-intensity supervision and monitoring focusing on changes in ownership or livestock operation and actual use. Trend plots will be established for long-term trend data. Operator would submit actual use information yearly except custodial allotments.

Range improvements encouraged and authorized through private investment and where justified a 50:50 matching basis to improve productivity and/or meet management objectives.

Maintenance of range improvements will generally be the responsibility of the livestock operator unless otherwise specified in an existing cooperative agreement.

The following items would also be considered in ranking allotments.

1. Land status.
2. Apparent trend.
3. Social controversy.
4. Willingness of livestock users to accept intensive management.
5. Dependence of operators of Federal range.
6. Potential for land treatment.
7. Previous Bureau plans and improvements.

Consultation with ranchers would, whenever possible, include whoever was available from: DWR, USE, SUSC, Utah Department of Natural Resources, County Agent, bankers, Grazing Advisory Board members, Farm Bureau, GS, County Commissioners, and the Five-County Association of Government.

Consultation meetings with ranchers would generally follow this outline:

a. BLM would present its data on the carrying capacity, trend, utlization, actual use, management problems, trespass, etc.

b. BLM would present proposed management system and livestock adjustments developed during the inventory, planning, and EIS process to solve identified problems.

c. Livestock people would be encouraged to present proposals and suggestions.

d. Other groups would be encouraged to make suggestions.

e. Agreement would be reached on a proposed course of actions. The agreement would consist of:

    (1) Amount of use and season including exchange of use.

(2) Proposed management to solve identified problems.

(3) Understanding on range improvement construction and maintenance responsibility.

(4) Utilization standards and details of monitoring studies.

(5) Checkpoints for new decisions (generally 2 and 5 years).

(6) Decisions on issuance 10-year permits.

(7) Statement on requirement for RPS updates, decisions, and possible effect of appeals by outside groups.

The initial RPS would be issued based on the proposed action in the EIS.

RPS update and decisions would be issued whenever needed to keep the process moving.

RPS update would only include allotments where agreements or lack of agreement had been negotiated.

Allotments placed in M and C categories could change to I over several years time based on the results of monitoring studies, change in current livestock operations, conflicts in land use resource utilizations, and/or changes in current economics or technology.

Decisions would specify the management level, amount of use authorized, season of use, and amount and location of monitoring studies required, maximum utilization permitted and the formula that would be used to adjust use based on the utilization and climate.

GLOSSARY

Active Grazing Preference. The total number of animal unit months of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee.

Active Use. See Average Active Authorized Use.

Agricultural Support Industries. Industries which provide equipment, materials, expertise, etc. to ranchers and farmers.

Allotment. An area of land where one or more operators graze their livestock. Generally consists of public land but may include parcels of private or State lands. The number of livestock and season of use are stipulated for each allotment. An allotment might consist of several pastures or only one pasture.

Allotment Management Plan (AMP). A written program of livestock grazing management, including supportive measures if required. Designed to attain specific management goals in a grazing allotment.

Animal Unit Month (AUM). The amount of forage required to sustain the equivalent of one cow or five sheep for 1 month. This is approximately 800 pounds of air dried forage. Animal unit equivalents for wildlife and wild horses have been derived from this amount of forage.

Animal Units. One cow with a calf less than 6 months old, or an equivalent identified as 6.15 sheep, 9.4 antelope, 8.9 mule deer, or 2.05 elk.

Average Active Authorized Use. The average over a period of 5 to 10 years of that portion of Active Grazing Preference (AUMs) that the rancher chooses to utilize each of those years. For the sake of simplicity, this terminology is used interchangeably with such terms as active use, current stocking, average actual use, and average licensed use.

Average Actual Use. See Average Active Authorized Use.

Base Property. Those lands in a ranching enterprise which are owned or under long-term control of the operator and have the capability to sustain the number of livestock for a specified time period for which a grazing privilege is sought (base property requirment).

Browse. As a noun, trees and shrubs used as food by cattle, deer, elk, and other animals. As a verb, to consume, feed, or eat browse plants.

Burn-Broadcast. A method of burning current vegetation and revegetating by broadcasting seed.

Burn-Drill. A method of vegetation treatment whereby an area is burned and seeded with a rangeland drill.

Carrying Capacity. The maximum stocking rate possible without inducing damage to vegetation or related resources such as watershed. This incorporates such things as the suitability of the rangeland to grazing as well as the proper use which can be made on each and all the plants within the area. Normally expressed in terms of acres per animal unit month or sometimes referred to as the total AUMs that are available in any given area such as an allotment. Areas that are unsuitable for livestock use are not computed in the carrying capacity. This may or may not be the same as the stocking rate.

Chain-Broadcast. A method of mechanical vegetation treatment, whereby an area is chained to remove undesirable vegetaion and is reseeded by scattering seed on the surface of the soil.

Chain-Broadcast-Chain. A method of removing undesirable plants by chaining, seed broadcasting, followed by chaining to ensure that seeds are covered.

Chain-Burn-Broadcast. A method of mechanical vegetation treatment whereby an area is chained, debris is burned, followed by seed broadcasting.

Chain-Burn-Broadcast-Chain. A method of mechanical vegetation treatment whereby an area (usually pinyon-juniper) is chained, all debris is burned, seed is broadcast, then chained to ensure that seeds are covered.

Chain-Burn-Drill. A method of burning current vegetation and revegetating by drilling in seed.

Climax Community. The final vegetation community which emerges after a series of successive vegetation stages and perpetuates itself indefinitely unless disturbed by outside forces.

Community. An aggregate of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals, or both.

Continuous Seasonal. Grazing use made during an entire season such as summer or winter. Ususally the same use is made each year.

Critical Period. A period of plant development considered essential to the survival of an individual plant.

Current Stocking. See Average Active Authorized Use.

Custodial. Minor degree of management effort applied to regulating livestock use on a range area. Generally custodial managmeent involves those situations where the public land is a small part of the total grazing area and/or other resources are limited. Usually only livestock numbers, class of animal, and grazing season are specified by BLM.

Deferred Rotation Grazing. Discontinuance of grazing on various parts of rangeland in succeeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. Two, but usually three or more separate units are required. Control is usually ensured by unit fencing, but may be obtained by camp unit herding.

Density. Density is the number of individuals per unit area.

Desirable Forage Plants. Those plants that are palatable and productive forage species which are preferred by grazing animals. They are normally long-lived plants that can include grasses, forbs, and browse. These plants are to be maintained or increased by intensive livestock management.

Desirable Plants. Those plants that are palatable and productive forage species. They are normally long-lived plants that include grasses, forbs, and browse.

Exchange of Use. An agreement made with a licensee having ownership or control of non-Federal land interspersed and grazed in conjunction with surrounding Federal rangeland. This agreement specifies the carrying capacity and gives the BLM control of the non-Federal land for management purposes.

Forb. A nonwoody, broadleaved herb other than grass; a weed.

Grazing Preference. The total number of animal unit months of livestock grazing on public lands apportioned and attached to base propety owned or controlled by a permittee or lessee.

Grazing System. A systematic sequence of grazing use and nonuse of an allotment to reach identified multiple use goals or objectives by improving the quality and quantity of the vegetation.

Grazing Treatment. Under a grazing system, grazing or resting a particular unit of land (usually a pasture) at particular times each year to attain particular vegetation goals.

Gross Revenues. The total receipts of all sales; does not take into account costs of production.

Guzzlers. A water collection development designed for wildlife, especially birds.

Irreversible/Irretrievable. Incapable of being reversed or recovered once an action is initiated.

Key Species. A plant that is a relatively or potentially abundant species. It should be able to endure moderately close grazing and serve as an indicator of changes occurring in the vegetation complex. The key species is an important vegetation component that if overused, will have a significant effect on watershed conditions, grazing capacity, or other resource values. More than one key species may be selected on an allotment. For example, a species may be important for watershed protection, and a different species may be important for livestock forage or wildlife forage, etc.

License. An authorization that permits the grazing of a specified number and class of livestock on a designated area of grazing district lands for a period of time, usually not in excess of 1 year.

Livestock Operators. A person or organization legally permitted to graze livestock on public land.

Management Framework Plan (MFP). Land use plan for public lands which provides a set of goals, objectives and constraints for a specific planning area; a guide to the development of detailed plans for the management of each resource.

Mechanical Treatment. Any range modification involving the use of mechanical equipment (tractors, plows, etc.).

Net Cash Income. The difference between gross revenues and variable costs.

Non-competitive Forage. That portion of forage which deer, elk, or antelope use and which is not used by livestock.

Pasture. A subdivision of a grazing allotment.

Percent Federal Range. AUMs on public lands compared to AUMs on private and State lands.

Percent Use. Grazing use of current growth, usually expressed as a percent of weight removed.

Permit. An authorization which allows grazing of a specific number and class of livestock on a designated area of grazing district lands during specified seasons each year for a period of usually 10 years.

Phenology. The science concerned with periodic biological events in their relation to seasonal climatic changes. Plant phenology refers to dates of sprouting, flowering, seed production, and regrowth, as well as other observable occurrences in plant development. Essential in developing a grazing system which will compliment or conform with seasonal plant requirements.

Physiological Requirements. Nutritional requirements a plant needs for growth.

Plant Vigor. The relative well-being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

Plow-Drill. A method of vegetation treatment where the vegetation is removed by plowing and new seed is distributed using a rangeland drill.

Prescribed Burn. The use of fire as a management tool under specified conditions for burning a predetermined area.

Prior Stable. These are mule deer numbers and represent past demonstrated carrying capacities for the rangeland involved. These numbers were supplied by the Utah Division of Wildlife Resources.

Production Function. A mathematical representation of the physical relationship between total output and variable inputs.

Proper Use Determination. Proper use for a particular plant is the degree to which its current growth will be utilized by a grazing animal by determining the differences between total current production in a normal growth year and the amount left after proper use. This difference indicates all forage removed during grazing, including wastage by trampling. Any foliage removal or damage by rodents, insects, or disease is provided for under utilization deductions, and is therefore not considered in establishing proper use factors. If a plant provides no forage for a kind of grazing animal during a particular season, it is rated zero for that combination, although it may be present on the range and supply forage at other seasons. This may be especially the case for winter rangeland where some plants are evident during the growing season but are unable to provide forage during the dormant period.

Public Lands. Lands administered by the Bureau of Land Management. Formerly called national resource lands or public domain.

Range Site (Ecological Site). A range site is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total preference.

Remove Grazing. All grazing by livestock would be removed.

Rest. Refers to seasonal resting from livestock grazing of a range.

Rest Rotation Grazing. An intensive system of management whereby grazing is deferred on various parts of the range during succeeding years, allowing the deferred part complete rest for 1 year. Two or more units are required. Control by fencing is usually necessary on cattle range, but may be obtained by herding on sheep ranges.

Return Above Variable Costs and Family Labor. Net cash income less the cost of family labor when valued at some fair market rate.

Return to Land. Net cash income less family labor, depreciation, and interest on investment other than land.

Return to Total Investment. Net cash income less family labor and depreciation.

Riparian Habitat. Habitat in which the vegetation is influenced by the water of streams, reservoirs, ponds, etc. (permanent or intermittent). It is usually unique or limited in arid regions and is, therefore, of great importance to a wide variety of wildlife.

Riparian Vegetation. Plants that are adapted to moist growing conditions found along permanent waterways and ponds.

Season of Use. Refers to the period of time that livestock are allowed to graze on an allotment.

Seasonal Dependency. The percent of a permittee's total herd grazing on BLM rangeland during the permittee's season of use.

Soil Surface Factor (SSF). A numerical expression of surface erosion activity caused by wind and water as reflected by soil movement, surface litter, erosion pavement, pedestalling, rills, flow patterns, and gullies. Values may vary from 0 for no erosion to 100 for severe erosion conditions. A determination of the SSF is made directly in the field by evaluating each of the above factors.

Specific Management. Management which is proposed to be implemented after interim management and includes specific grazing systems, vegetation treatments, and rangeland developments.

Spray. A method of applying herbicides to dense stands of undesirable plants such as sagebrush so that a more diversified and desirable variety of plant species may become established.

Stocking Rate. The degree to which a grazing unit is stocked with livestock, usually expressed in AUMs. The stocking rate may be more or less than the carrying capacity.

Strutting Ground. A site to which sage grouse regularly resort for purposes of sexual display or courtship.

Succulent. Having fleshy or juicy tissues with high water content.

Unallotted Lands. Those lands not allocated to a specific use.

Undesirable Plants. Consist principally of invaders, noxious, and low value forage plants. The aim in management is to improve range condition to a point where these species are replaced by desirable or intermediate species.

Unit Resource Analysis (URA). A comprehensive display of physical resource data and an analysis of the current use, production, condition to a point where these species are replaced by desirable or intermediate species.

Utilization. The proportion of the current year's forage production that is consumed or destroyed by grazing animals. This may refer either to a single species or to the whole vegetation complex. Since utilization data actually records the effect of livestock grazing on the vegetation and related resources, particularly for watershed, it is possible to estimate the correct grazing capacity directly from utilization information.

Variable Costs. Costs associated with the price and quantity of variable inputs of the production process; that is, those costs which vary as output levels and input requirements change.

Variable Inputs. Inputs to the production process which vary in response to changes in output levels.

Vegetation Type. A plant community with distinguishable characteristics. A more or less distinct vegetation unit may be delineated on the basis of aspect, composition, or density.

Vigor. The state of health of a plant. The capacity of a plant to respond to growing conditions, to make and store food, produce food, produce seed, or reproduce vegetatively, that is, by stolons or rhizomes.

LIST OF ABBREVIATIONS

AMP = Allotment Management Plans

AUM = Animal Unit

BEA = Bureau of Economic Analysis

BEBR = Bureau of Economic and Business Research - University of Utah

BLM = Bureau of Land Management

CEQ = Council on Environmental Quality

EIS = Environmental Impact Statement

ERS = Economic Research Service

MFP = Management Framework Analysis

PU = Planning Unit

SSF = Soil Surface Factor

SVIM = Soil-Vegetation Inventory Method

UDWR = Utah Division of Wildlife Resources

URA = Unit Resource Analysis

USDA = U.S. Department of Agriculture

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